Annual Refinery Number 15 Cents a Copy

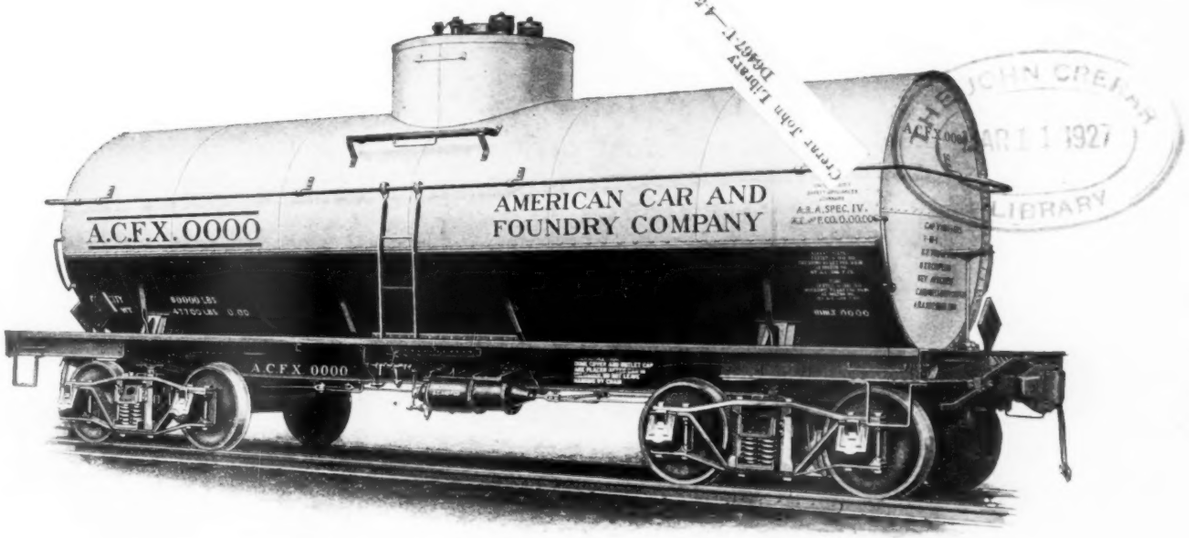
The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Every Thursday TULSA, OKLAHOMA, March 10, 1927 $6.00 a Year

Property of John Crerar Library

JOHN CRERAR LIBRARY MAR 11 1927



Consider Past Performances

The oldest tank cars in service today were built by "Car Foundry." Investigate their records, or the records of "Car Foundry" tank cars built more recently, and you will find that they have stood up wonderfully under the ever-increasing strenuousness of modern railroading.

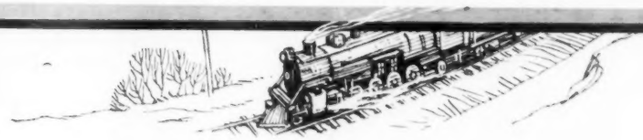
Then compare the older cars, point by point, with the "Car Foundry" tank cars of today. You will see that the present "Car Foundry" construction is heavier, stronger, more durable than ever before—built to meet not only the requirements of today but also the even rougher usage which will no doubt be encountered in the years to come.

Write for "Car Foundry" specifications and booklet of recent tank car constructions—and *always get a "Car Foundry" quotation.*

American Car & Foundry Company

Chicago 30 Church St., New York St. Louis

"Car Foundry" Tank Cars



Advertisers' Index on Page 33 Table of Contents on Page 34

When it's needed, it certainly is NEEDED!

Screw in this Three-Point Reamer right above a fishtail or a disc bit, and you will never have any more trouble with tight hole. Keeps all of 35% of the hole always free for upward movement of slush and cuttings. Insures quicker drilling besides—because Reamer rigidly holds Bit in position to do the drilling fastest. Because the Reed Reamer is extremely strong, practical in design and construction, its user *KNOWS* he is safe against hindering or slowing the work in any degree whatsoever.

Reed DOUBLE REAMER

SIX points in tandem assure utmost reaming contact. Does away with all need for reaming down before setting casing. Expedites quick change from fishtail to disc, from disc to rock bit. Proved again and again, on the hardest jobs, a work-saver and a speed insurance, simply because its *CLEARANCE* is so very ample for every job.

REED ROLLER BIT COMPANY

HOUSTON

LOS ANGELES

REED ROTARY DRILLING TOOLS

SPEED · ECONOMY · DURABILITY

The ADVERTISERS' INDEX

A

Acme Fishing Tool Co.
Ajax Iron Works 168-169
Ajax Rope Co. 236
Allegheny Steel Co.
Aluminum Co. of America
Amarillo Abstract Co. 238
Amarillo Hotel
American Asphalt Paint Co.
American Cable Co., Inc. 11
American Car & Foundry Co. Front Cover
American Mfg. Co. of Texas
American Radiator Co. 149
American Roller Bearing Co. 231
American Rolling Mill Co. 150
American Schaeffer and Budenberg Corp. 139
American Sheet & Tin Plate Co.
American Spiral Pipe Works
American Telephone & Telegraph Co.
American Well Works
Anderson Engine & Foundry Co.
Andrews Steel Co. 218
Arco Company, The 138
Armstrong Bros. Tool Co. 236
Arrowhead Iron Works, Inc. 191
Askania, Werke, A. G.
Association of Natural Gasoline Mfgrs. 16
Athey Truss Wheel Co.
Auer, C. A.
Austin Co.
Axelson Machine Co. 26

B

B. & A. Specialty Co.
Baash-Ross Tool Co.
Babcock & Wilcox Tube Co., The
Baker Casing Shoe Co. 224
Baldwin Chain & Mfg. Co.
Barber Asphalt Company 177
Barber-Greene Co.
Barnickel, Wm. S., & Co. 232
Barnsdall Refineries, Inc.
Bartlesville Supply Co. 185
Beaumont Iron Works Co. 180
Becker Specialty Co.
Belle City Mfg. Co.
Bessemer Gas Engine Co. 15
Biggs Boiler Works Co. 5
Bignall & Keeler Machine Works 12
Blackmer Pump Co.
Blaw-Knox Co. 29
Borden Co. 231
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co., The 69
Bowser, S. F., & Co., Inc.
Braden Steel & Winch Co.
Brady Conveyors Corp. 10
Braun, C. F., & Co. 106-107
Bridgeport Machine Co. 14
Bristol Co.
Broderick & Bascom Rope Co. 25
Brokaw, Dixon, Garner & McKee 238
Brooks Engineering Corp. 154
Brown, Arthur C. 238
Brown Instrument Co. 97
Brownell Co. 236
Buckeye Traction Ditcher Co.
Buda Co.
Buffalo Gasolene Motor Co.
Bullock, Henry E.
Burns Tool Co.
Burt Corporation
Burt Mfg. Co. 217
Butler Mfg. Co. 91
Byers, A. M., Co.
Byron Jackson Pump & Mfg. Co., Inc. 142

C

Cameron Iron Works
Campbell, J. A. 147
Canadian Pacific Railway Co.
Carbondale Machine Co.
Celite Products Co. 166
Central Alloy Steel Corp.
Central Forging Co.
Central Tube Co. 232
Chain Belt Co.
Champion Machine & Forging Co.
Chaplin-Fulton Mfg. Co. 232
Chapman Valve Mfg. Co.
Chestnut & Smith Corp.
Chicago Bridge & Iron Works
Chicago Pneumatic Tool Co. 7
Chisholm-Moore Mfg. Co. 174
Clark Bros. Co. 66-67
Classified Wants 192-193-194
Cleveland Tractor Co.
Cleveland Trencher Co., The
Climax Engineering Co.
Columbian Rope Co.
Columbian Steel Tank Co. 220
Columbus Forge & Iron Co. 238
Continental Motors Corp.
Continental Supply Co. 27-171
Cook Motor Co., The
Cooper, C. & G., Co. 162-163
Cox & Sons Co., The
Crane Co. 115
Crane Packing Co.
Crescent Belt Fastener Co.
Crown Central Petroleum Corp. 95

D

D. & B. Pump & Supply Co.
Darling Valve & Mfg. Co.
Dart, E. M., Mfg. Co.
Davis, G. M., Regulator Co. 148
Dayton Pipe Coupling Co.
Dearborn Chemical Co. 239
De La Vergne Machine Co. 229
Delta Electric Co.
Detex Watchclock Corp.
Detroit Graphite Co. 216
Diamond Drill Carbon Co. 234
Dixon, Joseph, Crucible Co.
Dodge Mfg. Co.
Donovan Boiler Works, Inc.
Dresser, S. R., Mfg. Co. 45
Dunn Mfg. Co. 49
DuPont de Nemours & Co., Inc., E. I.
Duriron Company, The 144

E

Eagle-Picher Lead Co. 3
Eastern Torpedo Co.
Eclipse Paint & Mfg. Co. 155
Edward Valve & Mfg. Co. 141
Elliott Core Drilling Co. 237
Empire Refineries, Inc. 6
Emsco Derrick & Equipment Co.
Exchange National Bank

F

Fairbanks-Morse & Co.
Federal Supply Co.
Fenwick-Reddaway Mfg. Co. 226
Fisher Governor Co. 131
Foamite-Childs Corp.
Fohs, F. Julius.
Foos Gas Engine Co. 173
Ford Chain Block Co. 226
Foxboro Co., Inc., The
Franklin Valveless Engine Co. 78-79
Frick-Reid Supply Co. 8

G

Gallagher Co.
Gardner Governor Co.
Garlock Packing Co.
Gasoline Recovery Corp. 215
Gaso Pump & Burner Mfg. Co. Inside Back Cover
General American Tank Car Corp. 233
General Electric Co. 56
General Insulating & Mfg. Co.
General Motors Truck Co.
Gilbert & Barker Mfg. Co.
Gilfillan Machine Works 186
Goodrich, B. F., Rubber Co.
Goodyear Tire & Rubber Co.
Gott, H. P., Mfg. Co. 232
Gould's Pumps, Inc.
Graham Brothers
Graver Corp. 133
Gray Processes Corp. 87
Greenspon's Joseph, Sons, Iron & Steel Co. 225
Griscom-Russell Co. 84
Guiberson Corp. 28
Gulf Refining Co. 24

H

Halliburton Oil Well Cementing Co.
Harrisburg Pipe & Pipe Bending Co.
Haynes Stellite Co. 165
Hazard Mfg. Co.
Hepponstall Forge & Knife Co.
Hercules Motors Corp.
Hercules Tool Co.
Heydrick Mapping Co. 238
Hill, Hubbell & Co.
Hills-McCanna Co. 159
Hinderliter Tool Co.
Homestead Valve Mfg. Co. 235
Hope Engineering & Supply Co. 230
Hopkins, Edwin B. 238
Hough, Charles N., Mfg. Co.
Hoyt Metal Co. 152
Hughes Tool Co. Back Cover
Humble Oil & Refining Co. 140
Hunt, Robert W., Co.

I

Imperial Belting Co. 225
Imperial Royalties Co.
Independent Oil & Gas Co. 117
Ingersoll-Rand Co.
International Derrick & Equip. Co. 32
International Harvester Co. of America.
International Nickel Co.
International Supply Co.
Iron King Mfg. Co. 230

J

Jarecki Mfg. Co.
Jefferson Union Co. 31
Jensen Bros. Mfg. Co. 190
Johns-Manville Corp.
Jones, S. M., Co. 18

K

Kanotex Refining Co., The 218
Kansas City Hay Press Co. 190
Kaw Steel Construction Co. 20
Keckley, O. C., Company 233
Kellogg, M. W., Co. 235
Kelly, John Eoghan 238
Kelly-Springfield Tire Co. 211
Kennedy Valve Mfg. Co. 201
Kerotest Mfg. Co. 22
Keuffel & Esser Co. 232
Kewanee Boiler Co.
Key Boiler Equipment Co.
Kinley, M. M., Co.

L

Landis Machine Co. 2
Larkin & Co. 179
Layne & Bowler Co. 19
Leader Iron Works
Leidecker Tool Co. 175
Leschen, A., & Sons, Rope Co.
Lientz, B. P., & Co.
Lincoln Electric Co.
Linde Air Products Co. 1
Link-Belt Co. 183
Longyear, E. J., & Co.
Lubrikup Company
Lubrite Refining Co. 240
Lucas, John & Co., Inc. 181
Lucey Mfg. Corp. 4
Ludlow-Saylor Wire Co. 81
Ludlow Valve Mfg. Co. 146
Lufkin Fdy. & Machine Co. 65
Lufkin Rule Co.
Lunkenheimer Co. 137

Mc

McCord Radiator & Mfg. Co. 151
McGregor Working Barrel Co. 234
McIntosh & Seymour Corp.
McJunkin Supply Co.
McKee, Arthur G., & Co. 120-121

M

Magnolia Petroleum Co.
Maloney Tank Mfg. Co. 170
Manzel Bros. Co.
Marion Machine Fountry & Supply Co.
Marsh Gauge Pole Co. 238
Master Builders Co.
Mathieson Alkali Works, Inc.
Maverick, Phillip 238
Merco Nordstrom Valve Co. 98
Merit Oil Equipment Co.
Metric Metal Works
Midwest Piping & Supply Co. 145
Miller Improved Gas Engine Co.
Miller, Max B., & Co., Inc.
Mine Safety Appliance Co. 222
Moon Mfg. Co.
Moore, Lee C. & Co., Inc. 77
Munn & Co. 238
Murray Tool & Supply Co.
Myers, F. E., & Bro., Co. 238

N

Nabors, W. C., Co.
National Carbon Co., Inc. 1
National Lead Co.
National Petroleum Engineering Co. 238
National Supply Co. 124-125
National Transit Pump & Machine Co. 53
National Tube Co.
National Turnbuckle Derrick Co.
Neilan Schumacher & Co.
Newton Process Mfg. Co. 43
Norris Bros., Inc. 176
Norris, W. C.
North American Car Corp.
Northern Fire Apparatus Co.
Northern Oil Information Bureau 238
Northrup Equipment Co.
Nuttall, R. D., & Co.
Nye Tool & Machine Works

O

Oakite Products, Inc. 60
O'Brien Steel Construction Co.
Oertling, L., Ltd.
Ohio Steel Foundry Co. 187
Oil City Iron Works 167
Oil Conservation Engineering Co.
Oil Country Specialties Mfg. Co.
Oil Insurance Association 239
Oil Well Accessories Co.
Oil Well Supply Co. 73
Oxweld Acetylene Co. 1

P

Page Steel & Wire Co.
Paige & Jones Chemical Co., Inc. 55
Parkersburg Machine Co.
Parkersburg Rig & Reel Co. 17
Patrick, R. S. 221
Pattin Bros. Co.
Pelican Well Tool & Supply Co.
Penberthy Injector Co. 240
Petroleum Appliance Co. 128-129
Petroleum Iron Works Co.
Pforzheimer, Carl H., & Co. 222
Phillips Petroleum Co. 158
Pittsburg Boiler & Machine Co.
Pittsburgh-Des Moines Steel Co. 153
Pittsburgh Equitable Meter Co.
Pittsburgh Steel Products Co.
Pilbrico Jointless Firebrick Co. 82
Plymouth Cordage Co. 240
Porter & Co.
Powell, William, Co.
Power Mfg. Co. 236
Power Piping Co. 238
Power Plant Equipment Co. 209
Power Specialty Co. 161
Prescott Co., The
Prest-O-Lite Co., Inc., The 1
Pure Oil Co. 30
Pyle-National Co.

R

Ratigan, J. P., Co.
Reading Iron Co. 58
Reading Steel Castings Co., Inc. 227
Reed Roller Bit Co. Inside Front Cover
Regan Forge & Engineering Co. 75
Reid, Joseph, Gas Engine Co. 23
Republic Iron & Steel Co.
Republic Supply Co. 13
Ridge Tool Co.
Riehle Bros., Testing Machine Co.
Riter-Conley Co. 238
Robinson, A. 234
Rock Island Plow Co.
Roots, P. H. & F. M., Co. 219
Ross Heater & Mfg. Co., Inc.
Ross-Meehan Foundries
Ryerson, Joseph T., & Son, Inc. 236

S

Safety Pulling Machine Co.
Schutte & Koerting Co.
Shaffer, J. E., Co.
Shaffer Oil & Refining Co. 237
Shaffer Tool Works 236
Shaw, S. F.
Sheffield Steel Corp.
Shippers' Car Line Corp.
Sinclair Refining Co. 205
Sivyer Steel Casting Co. 21
Skelly Oil Co. 184
Skinner, M. B., Co. 234
Smith, A. O., Corp. 127
Smith Separator Co. 102-103
Sonner, P. J., Gas Burner Co. 178
South Chester Tube Co.
Southern Cornice Works
Southwestern Engineering Corp. 164
Southwestern Engineering Co., Inc.
Spang & Co.
Spang, Chalfant & Co. 213
Spence Machine Co.
Spencer Trailer Co.
Stanley Belting Corp.
Star Drilling Machine Co.
States Engineering Co., The
Stearns-Roger Mfg. Co.
Steiner, George 236
Strom Steel Ball Co.
Sullivan Co., The
Sullivan Machinery Co. 221
Symonds & Henson Rig Co.

T

Taubman Supply Corp.
Taylor Instrument Companies
Templeton, Kenley & Co., Ltd. 212
Texas Company, The 110-111
Thomas, C. R. 238
Tidal Refining Co. 189
Timken Roller Bearing Co. 228
Tips Engine Works
Titusville Forge Co. 182
Titusville Iron Works
Toledo Pipe Threading Machine Co. 143
Trimont Mfg. Co.
Trumble Gas Trap Co. 212
Truscon Steel Co.
Turk & Mauldin 238
Tulsa Sheet Metal Co.
Twin Disc Clutch Co.

U

United Iron Works, Inc.
United States Cast Iron Pipe & Fdy Co.
United States Rubber Co.
United States Industrial Diamond Corp. 234
Universal Oil Products Co. 92-93
U. S. Tool Co.

V

Victaulic Co. of America 223
Victor Balata & Textile Belting Co. 217
Vogt, Henry, Machine Co. 128
Volz Engineering Equipment Co.

W

Wagner Electric Corp. 191
Wailes Dove-Hermiston Corp. 188
Wall Rope Works, Inc.
Walsh & Weidner Boiler Co.
Walworth Co. 51
Warren Petroleum Co.
Waukesha Motor Co.
Westcott & Greis 9
Western Machinery Co.
Western Supply Co.
Westinghouse Electric & Mfg. Co.
Wheeler Condenser & Engineering Co. 134
Wheeling Steel Corp.
Wickwire Spencer Steel Co.
Wico Electric Co.
Widdell Engineering Co. 120-121
Williams, J. H., & Co.
Williamsport Wire Rope Co. 173
Williams Tool Corp.
Wilson Oil Tools Corp.
Winkler-Koch Engineering Co., The 156
W-K-M Company, Inc. 71
Worthington Pump & Machinery Corp. 62
Wright Mfg. Co.

Y

Yale & Towne Mfg. Co.

Z

Zero Hour Torpedo Co.

WHAT AND WHERE TO BUY—PAGES 241-242-243

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

VOL. 25. NO. 42. TULSA, OKLAHOMA, MARCH 10, 1927

Copyright, 1927, by The Petroleum Publishing Co

TABLE OF CONTENTS

SPECIAL ARTICLES

Production Drop Provides Bright Spot ... 35
By Andrew M. Rowley

Drilling Increases in Flush Fields ... 37
By James McIntyre

March Crude Runs Same as February ... 38
By W .T. Ziegenhain

To Build Longest Gas Line in the World ... 39

E. G. Seubert New Indiana President ... 39

Supreme Court Clarifies Police Power ... 40
By Phillip Kates

Special Meeting for Micropaleontologists ... 41

Only 37 Per Cent Free Oil in Seminole ... 41
By J. L. Dwyer

Western Refiners' Conference ... 42
By C. O. Willson

Too Much Crude (Editorial) ... 44

Personal Sketch of John D. Rockefeller ... 80
By John K. Winkler

Possibility of Oil Structures in Gulf of Mexico ... 80
By Charles E. Kern

REFINING AND MARKETING

Stop, Look and Listen ... 88-89
By W. T. Anderson

Refinery Operations in U. S. (graphic chart) ... 90

Gasoline From Gases at Refineries ... 94
By George A. Burrell

Better Tank Car Sales Methods Needed ... 94
By C. L. Henderson

Producing Gasolines From Shale Oil ... 96
By Dr. Roy Cross

Developments in Refining ... 99
By Dr. C. K. Francis

Refiners Should Avoid Overproduction ... 99
By W. S. Farish

Annual Refinery Survey ... 100-118
By C. O. Willson

Recovering Sludge Acid at Refinery ... 122
By Otto Mantius

Co-operation Great Need of Refiners ... 122
By P. M. Miskell

Keep Output in Line With Demand ... 122
By L. L. Marcell

California Refined Market Outlook ... 126
By Carl J. von Bibra

Natural Gasoline in California ... 126
By Paul D. Barton

Making Special Naphthas Costly ... 130
By W. T. Ziegenhain

Changed Sales Policies ... 130
By Berry V. Stoll

Research in Petroleum Industry ... 132
By Benjamin T. Brooks

Increased Recovery Danger to Refiners ... 132
By George D. Locke

Special Naphthas With Pipe Still ... 135
By Fred C. Koch

Bureau of Mines Studies Treating ... 136
By Neil Williams

Salesmen Should Know Costs ... 136
By F. W. Burford

Volatility and Freedom From Knock ... 148
By T. A. Boyd

Big Consumption Continues in East ... 194
By N. O. Fanning

Chicago Expects New Tankwagon Cut ... 195
By J. B. Waldo

Eliminating Odor at Refineries ... 196

Refining and Marketing News ... 198

Technical Questions Answered ... 199
By Dr. C. K. Francis

Plant Operators' Page ... 200

Refinery and Crude Prices ... 202-203

Tankwagon Quotations ... 204

Bureau of Mines and Oil Refining ... 214
By A. J. Kramer

FIELD OPERATIONS

Late Fields ... 47

North and West Texas ... 46-47
By C. D. Lockwood

Texas Panhandle ... 48
By C. D. Lockwood

Oklahoma ... 50
By J. L. Dwyer

Kansas ... 52
By J. L. Dwyer

North Louisiana-Arkansas ... 54
By James H. Dameron

Artesia, New Mexico ... 57
By Special Correspondent

Southwest Texas ... 59
By B. D. Stevenson

Gulf Coast ... 61
By P. L. McGreal

Rocky Mountain Area ... 63
By Frank B. Taylor

Canada ... 63
By Victor Lauriston

California ... 64
By L. P. Stockman

Pennsylvania-West Virginia ... 68
By D. S. Wakenight

Michigan ... 68
By Whit

Central West ... 70
By Whit

Kentucky-Tennessee ... 70
By Whit

ARTICLES OF GENERAL INTEREST

Men Known in Oildom and Personals ... 72

Natural Gas Developments ... 74

Equipment and Supplies ... 76

Classified Want Advertisements ... 192-193-194

What and Where to Buy ... 241-242-243

Crude Petroleum Statistics ... 242

Oil Securities Inactive and Lower ... 206
By N. O. Fanning

BE A REGULAR READER

The OIL and GAS JOURNAL Tulsa, Okla.

You are hereby directed to mail The Oil and Gas Journal to me for .....year. Enclosed find remittance $.....

Classify my interests as checked by me.

..... Producing ..... Refining
..... Equipment ..... Marketing

Name .....
Address .....
City .....

$6 a Year
$3 6 Months

Refinery Section Starts on Page 194

Production Drop Provides Bright Spot

Highest daily average estimated production in 1926, week ended Dec. 25, 2,385,139 bbls. Lowest in 1926, January 30, 1,915,960 bbls.

Relief Temporary, However, as Seminole and 8-6 and 9-5 Areas in Oklahoma Are Big Menace to General Situation

By Andrew M. Rowley

Highest daily average estimated light oil production in 1926, week ended Dec. 25, 1,797,349 bbls. Lowest in 1926, Jan. 30, 1,371,600 bbls.

The decline in the daily average crude oil production last week, the first decrease recorded since the week ending January 22, was one ray of sunshine during a period characterized by crude oil price reductions covering practically every area of the country except California and southwest Texas, and efforts of operators in the Seminole Field in Oklahoma to agree on some measure of conservation and curtailment. Seminole is generally conceded to be the cause of the price reductions announced during the past week and that section is still producing around 300,000 barrels daily despite the fact the removal of air from a number of wells resulted in a decline in the daily average output last week. Pipe line facilities of the field can handle only 265,000 barrels, hence the necessity of taking the air off some wells to limit the production to what can be handled and of building additional storage.

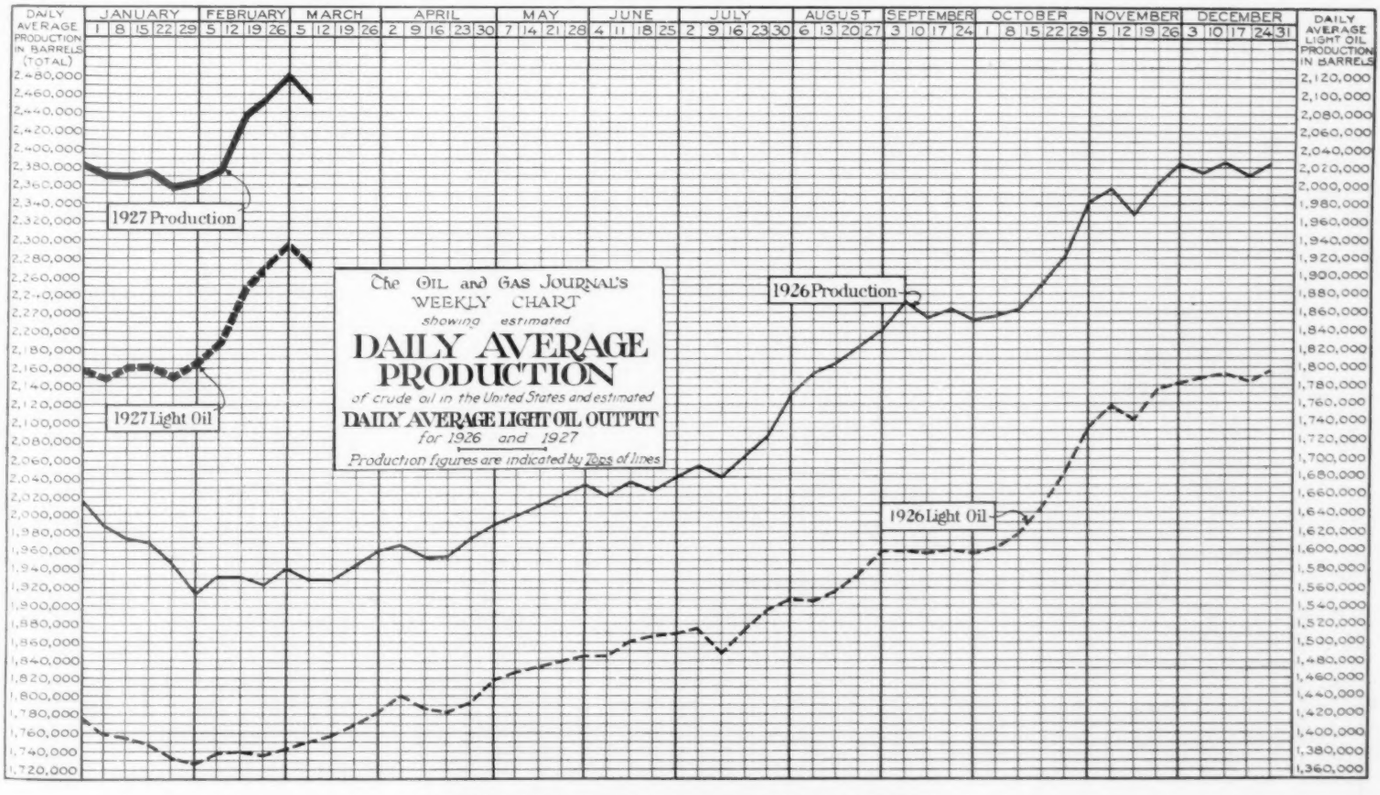
The decrease last week should not be taken as any criterion of the trend of production. Further increases may be expected unless some definite agreement is reached by the companies operating in Seminole which would result in holding down the output there or of limiting operations in the 8-6 and 9-5 areas near Seminole where further big production is expected to be developed within the near future. Cutting the price will have little effect upon drilling operations in flush fields where a big production is expected. There are more drilling operations under way now in Oklahoma, north and central Texas than there were four months ago. In addition, considerable wildcatting is being done. Lower prices will curtail field operations in areas where drilling costs are high and prospects of big flush production are doubtful, and it is expected the cut in the posted prices in the Texas Panhandle will result in a slowing down of operations there. But the big menace at present is the Seminole area and the big drilling campaigns under way in the 8-6 and 9-5 sections near Seminole.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended March 5, and a comparison with the previous week follows:

	Mar. 5		Feb. 26	
	Light	Heavy	Light	Heavy
Oklahoma—				
Tonkawa	25,245	.....	25,620	.....
Burbank	49,540	.....	48,910	.....
Other Osage Fields	34,980	.....	35,040	.....
Cushing and Shamrock	21,235	.....	21,160	.....
Bristow and Eastern Bristow	27,245	.....	27,210	.....
Cromwell	13,655	.....	13,510	.....
Garber	18,415	.....	18,505	.....
Blackwell-Braman	16,120	.....	16,620	.....
Seminole	298,715	.....	315,405	.....
Wewoka	18,695	.....	18,135	.....
Northern Miscellaneous	109,430	.....	109,815	.....
Southern Fields	67,860	.....	67,750	.....
Total Oklahoma	701,135	.....	717,680	.....
North Louisiana	40,480	12,085	40,760	12,265
Arkansas	26,200	99,450	26,505	100,445
North Central and West Texas	260,880	.....	262,462	.....
Texas Panhandle	126,949	.....	130,372	.....
East Central Texas	40,879	.....	42,424	.....
Kansas	116,310	.....	115,435	.....
Total Mid-Continent Area	1,312,833	111,535	1,335,638	112,710
Gulf Coast	.....	158,347	.....	158,295
Southwest Texas	.....	37,970	.....	38,500
Eastern	107,250	.....	107,250	.....
Rocky Mountain Area	83,870	.....	89,135	.....
California—				
Santa Fe Springs	45,000	.....	45,000	.....
Long Beach	91,000	.....	91,000	.....
Torrance	6,250	19,250	6,250	19,250
Huntington Beach	77,000	.....	78,000	.....
Dominguez	18,500	.....	18,500	.....
Rosecrans	12,000	.....	12,000	.....
Inglewood	24,500	14,000	24,500	14,000
Ventura Avenue	51,000	.....	51,000	.....
Seal Beach	24,000	.....	21,000	.....
Remainder of State	58,000	202,000	58,000	202,000
Total California	407,250	235,250	405,250	235,250
Total United States	1,911,203	543,102	1,937,273	544,755
Grand Total	2,454,305		2,482,028	

Total Decrease, 27,723 Bbls.; Light Oil Decrease, 26,070 Bbls.



WHAT AND WHERE TO BUY—PAGES 241-242-243

Crude Cuts Reflected in Gasolines

Oklahoma Refinery Markets Unsettled With Weaker Trends in All Products Except Fuel Oils. Prices of Latter Steady

By Neil Williams

A second general break within two weeks in the crude price structure not only in the Mid-Continent but over the country the past week proved a further disturbing factor in the Oklahoma Group 3 refined market. As a result trading in all products Monday and Tuesday was virtually at a standstill, the market was vague and prices more or less nominal.

While it will be several days and possibly until the last of the week before a true market can be determined early effects of the crude cuts indicated further weakening of all products except fuel oils. Sellers Tuesday still were offering no price concessions in fuels but it was apparent that the situation was uncertain.

The effect of the crude cuts on fuels, more than any other products, is being watched. Fuel oil prices for several months have been almost stationary and weathered the crude reductions the last of February without the slightest tendency toward weakening. But now, with additional softening of gasoline, inactive demand and prices low, fuel oil may be worth more as fuel than as cracking stock. This situation may have a tendency to limit cracking operations with a resultant boost in fuel oil production and may be reflected in a softening of this product.

The demand for Group 3 fuel oil at no time in the past several months has been active and the market has been held firm more because of the limited production than for any other reason. An increase in output at this time without a better movement probably would have an immediate effect on the market.

The crude reduction, however, was followed by an immediate lowering of gasoline quotations by most refiners but this failed to stimulate any demand. Due to the inactivity, the situation was extremely unsettled, more so than any other time this year, and indications were that there might be further softening of these products. Yet, sellers are of the opinion that this second crude cut may result in more stabilized conditions, which may be followed with a period of more active demand.

Until late Tuesday the Standard Oil Co. of Indiana had not announced a new reduction in tankwagon prices of gasoline, except an addition to its quantity discount schedule, and, with this expected by some market students, there may be a tendency for buyers to remain out of the market longer except for their absolute requirements. Tank-wagon reductions in virtually every marketing territory east of the Rocky Mountains have indicated a general unsoundness in refinery markets over the country which has been reflected in an additional bearish tone in the Group 3 picture.

Lowering of Group 3 gasoline prices has opened the extreme central western and eastern states to Mid-Continent competition and gasoline consumption has been generally good for two weeks but due to the sunsettled situation Oklahoma and Mid-Continent refiners have not been able to benefit from this except during a brief buying period before the last crude reductions. Some market students are of the opinion that the crude market still is far from stabilized and have gone so far as to declare that the present market structure is one without a foundation.

However, as has been pointed out on

(Continued on Page 207)

REFINED MARKET BAROMETER

Further breaks in the crude market structure east of the Rocky Mountains have resulted in continued unsettled and uncertain refinery markets throughout the country. Additional tank wagon cuts have weakened refinery gasolines and consequently prices are lower than a week ago, except in California. Consumption of gasoline has been good, but this has not been reflected in refinery demand; and, in addition, export movement has been inactive. Kerosenes generally are weak, but markets have been fairly steady. Demand is considered below normal, both export and domestic. Distillates, gas oils and other products for burners are slower because of the warmer weather. Price trends of these products are downward except on the Atlantic seaboard. Fuel oils continue steady to firm, but situation uncertain in Mid-Continent. Lubricating oils improving in some areas.

Mid-Continent—Refined markets inactive and unsettled, following additional crude reductions. Prices generally nominal, with little trading done. Fuel oils only products to hold quotations, and situation in North Texas tight, due to purchases by city of Denver. Gasolines, distillatesand gas oils lower in price and kerosene softer. No more declines in lubricating oils.

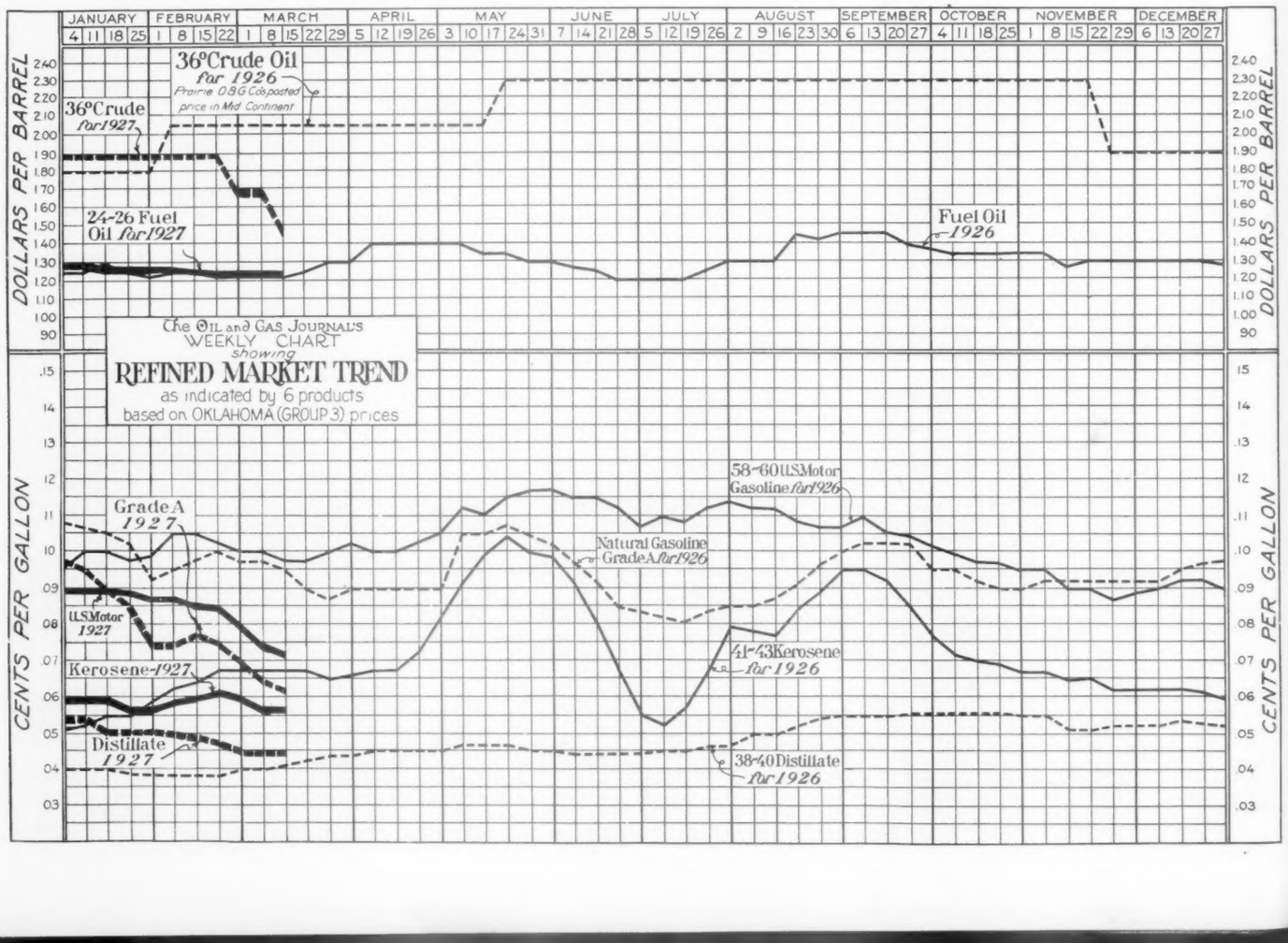
Atlantic Seaboard—Refinery gasolines slightly lower in price, but declines attributed more to adjustment of quotations following crude reductions rather than to any particular weakening. Consumption good. Kerosene weak with no improvement in sight. Gas oil demand better and Diesel oil and bunker oil firm. Lubricating oils more active. Wax improves.

Pennsylvania—Refinery markets upset, due to crude reductions. Gasoline prices lower and buying slower. Kerosene inactive, but fuel oil holding. Wax soft. Neutrals strong and bright stocks improved.

Chicago—All refined products dull. Crude reductions cause unsettled situation and buying slow. Gasolines lower in price. Kerosene more free. Gas oil and distillates also quiet.

California—Pessimistic tone felt in California refinery markets, due to crude and tank wagon changes east of Rocky Mountains. Heavy production of gasoline causes weaker situation despite heavier shipments to East Coast. Natural gasolines soft.

Gulf Coast—Lubricating oils less active, due to seasonal conditions requiring less zero cold test stocks. Other products uncertain.



Drilling Increases in Flush Fields

Notwithstanding Recent Market Cuts and Losses in Values, Operations Are Maintained at High Stage

By James McIntyre

When the Magnolia Petroleum Co. posted a new and reduced price on crude oil purchased in Oklahoma, Kansas and North Central Texas on Saturday, March 5, which action was followed by all the purchasing companies, the average barrel of oil in the Mid-Continent Field where the reductions were made fell off 22 cents in value. The new schedule changes the differential from 4 cents to 3 cents and makes oil from 28 to 28.9 gravity $1.23 per barrel, with 3 cents added for each degree up to 52 and above, which was made $1.95 per barrel.

Just before the Carter Oil Co. cut crude last November, the schedule ran from $1.65 for 28 gravity up to $3.57 for 52 gravity and over. On November 2 the Carter Oil Co. reduced the price and cut the differential from 8 cents to 5 cents, and on February 22 it made another cut in the price and reduced the differential from 5 cents to 4 cents. The Magnolia on Saturday cut the price again and lowered the differential to 3 cents. Compared with prices in early November, 28 gravity crude is now worth 42 cents per barrel less and 52 gravity crude $1.62 per barrel less. Thirty-eight gravity crude is down 92 cents. Seminole oil has fallen off $1.07 per barrel in four months.

New Prices and Cuts

Following are the new prices in Kansas, Oklahoma, North Central Texas and the high-grade fields in Louisiana and Arkansas, together with the reduction from the price prevailing on March 4:

Gravity—	Price per bbl.	Reduction per bbl.
28 to 28.9	$1.23	$0.12
29 to 29.9	1.26	.13
30 to 30.9	1.29	.14
31 to 31.9	1.32	.15
32 to 32.9	1.35	.16
33 to 33.9	1.38	.17
34 to 34.9	1.41	.18
35 to 35.9	1.44	.19
36 to 36.9	1.47	.20
37 to 37.9	1.50	.21
38 to 38.9	1.53	.22
39 to 39.9	1.56	.23
40 to 40.9	1.59	.24
41 to 41.9	1.62	.25
42 to 42.9	1.65	.26
43 to 43.9	1.68	.27
44 to 44.9	1.71	.28
45 to 45.9	1.74	.29
46 to 46.9	1.77	.30
47 to 47.9	1.80	.31
48 to 48.9	1.83	.32
49 to 49.9	1.86	.33
50 to 50.9	1.89	.34
51 to 51.9	1.92	.35
52 and above	1.95	.36

In line with the Mid-Continent price reductions, the Midwest Refining Co. reduced its posted price on Salt Creek, Wyoming, crude on Saturday, and on Monday, March 7, the Ohio Oil Co. lowered its Wyoming and Artesia, New Mexico, schedule 20 cents per barrel, and cut Indiana, Lima, Illinois, western Kentucky and Princeton oils 17 cents and Wooster crude 15 cents. The Seep Purchasing Agency on the same day cut all Pennsylvania grade oils produced in New York, Pennsylvania, southeastern Ohio and West Virginia 10 cents per barrel. Keister 15 cents and Cabell and Somerset 15 cents.

On Monday, March 7, the Humble Oil & Refining Co. met the Magnolia Petroleum Co.'s Mid-Continent price and posted a lower price on Carson and Hutchinson Counties in the Texas Panhandle, cutting the crude there from $1.25 per barrel to $1.05 per barrel. The Humble company made a new price of 90 cents per barrel for oil of 28 gravity in Gray and Wheeler Counties, with a 3-cent increase on each degree up to and including 44, and above which is made $1.38 per barrel. In Crane and Upton Counties, 26 gravity crude was cut to 80 cents, with a 3-cent increase on each degree upward. The Humble Oil & Refining Co. posted a new price of $1.30 on Grade A crude, a 10-cent decrease, and $1.25 on Grade B crude of 25 gravity, with a 3-cent increase on each degree upward.

Effective March 7, the Magnolia applied the Mid-Continent schedule to Louisiana. The Gulf Refining Co. and the Kay County Gas Co. (Marland) met the Humble company's prices in West Texas and Panhandle. The Magnolia Petroleum Co. put the Iatan and Howard County crudes on a Mid-Continent gravity basis.

On March 8 the Standard Oil Co. of Louisiana applied the new Mid-Continent price and gravity schedule to Caddo, Homer, Haynesville, Bull Bayou, Crichton, De Soto and El Dorado crudes. The Gulf Production Co. of Louisiana met this change, as did several smaller purchasing companies. The Texas Company reduced Caddo heavy oil below 28 degrees 99 cents, with a 3-cent increase for each degree up to 27.9, which was made $1.20. The Atlantic Oil Producing Co. and the Louisiana Oil Refining Co. reduced Stephens crude below 28 degrees $1.10, with a 3-cent increase for each degree up to 32 and above, which was made $1.25. No change was made in Smackover, light or heavy; Urania, Bellevue or Cotton Valley.

Oklahoma's Loss in Value

The Oklahoma fields produced 704,000 bbls. on Saturday, March 5, and the cut in crude lowered the value of this production approximately $154,880. Kansas production on Saturday was 116,395 bbls., and this cut reduced the value of the one day's output $24,443.

Since last November Semino'e oil has declined in value $1.07 per barrel. Burbank oil has been reduced 87 to 97 cents, according to gravity. Tonkawa production has gone off in value $1.17 and $1.22 per barrel, according to gravity. The big production of Seminole County outside of the Seminole Field has declined from 82 cents to $1.02 per barrel, depending upon the grades, which run from 36 degrees to 40 degrees. The Cushing-Shamrock Field's production has suffered 72 cents to $1.02 per barrel. The Osage fields outside of Burbank, where the crude ranges from 33 degrees to 51 degrees, have suffered cuts from 67 cents up to $1.57 per barrel. The big Bristow-Slick area has seen the value of its oil drop off from 52 cents up to $1.02 per barrel.

One hundred thousand barrels of oil a day in the Seminole Field on November 1, 1926, brought to producers there $269,000. The same quantity now brings $162,000. Put in another way, the early November price of 100,000 bbls. of Seminole oil now buys more than 166,000 bbls. of the same grade of oil.

Field Work Ho'ds Up

The various slashes in crude have not affected the number of field operations in Kansas and Oklahoma as a whole. On November 1, 1926, in Kansas there were 117 rigs up and 206 wells drilling, a total of 323 operations. On March 1, 1927, there were 87 rigs up and 218 wells drilling, a total of 305. A gain of 12 drilling wells was indicated on March 1, but a decline of 30 in rigs up, a net decline of only 18 operations.

In Oklahoma, on November 1, there were 183 rigs up and 1,295 wells drilling, a total of 1,488 operations, while on March 1, 1927, there were 281 rigs up and 1,298 wells drilling, a total of 1,579 operations. This showed a gain of 98 in rigs and 3 in wells drilling, a total gain of 101 operations. The Seminole area is responsible for this big increase in the face of an overproduction and a falling market. In the Seminole Field, including Townships 10-6, 9-6, 8-6 and 9-5, on November 1 there were 12 locations, 25 rigs up and 170 wells drilling. On March 1 there were 40 locations, 113 rigs up and 340 wells drilling. These figures indicate a sharp decline in operations outside of Seminole area, which can be attributed only to the discouraging condition of the crude market. A report for Oklahoma on the two days, November 1 and March 1, would show these results:

November 1

	Rigs	Wells Drg.	Total
Seminole	25	170	195
Outside	158	1,125	1,283
	183	1,295	1,478

March 1

	Rigs	Wells Drg.	Total
Seminole	113	340	453
Outside	168	958	1,226
	281	1,298	1,679

It will be seen from the above that even outside of the Seminole area, while there are 10 more rigs standing than on November 1, there were 167 fewer wells drilling and that the total decline in field operations outside of Seminole was 57.

Increase in Texas

In the Mid-Continent fields of Texas, including the East Central, North Central, Central, West and Panhandle areas, the total of rigs and wells drilling on March 1 was 1,735, while on November 1, 1926, just before the first of the recent series of price cuts was made, the total was 1,612, showing a gain of 123 in operations on March 1, notwithstanding the several reductions in the market price. The big gain was in Central Texas, where an increase of 211 operations is shown, which included a gain of 111 rigs and 100 wells classified as drilling, which include active drilling wel's and drilling wells shut down at the time the reports were made up. The West Texas area shows an increase of 19, but East Central Texas fell off 14, Panhandle 59, and North Central Texas 84 operations.

The following tables will show the status of the various areas on the two dates indicated:

Central Texas

	Rigs	Drg.	S.D.	Total
March 1, 1927	196	329	122	647
November 1, 1926.	85	253	98	436
Inc. March 1....				211

East Central Texas

	Rigs	Drg.	S.D.	Total
March 1, 1927	2	14	8	24
November 1, 1926.	7	15	16	38
Dec. March 1...				14

Texas Panhandle

	Rigs	Drg.	S.D.	Total
March 1, 1927	197	297	60	554
November 1, 1926.	170	343	100	613
Dec. March 1...				59

North Central Texas

	Rigs	Drg.	S.D.	Total
March 1, 1927	77	96	23	196
November 1, 1926.	96	141	43	230
Dec. March 1...				84

West Texas

	Rigs	Drg.	S.D.	Total
March 1, 1927	85	191	38	314
November 1, 1926.	75	173	46	295
Inc. March 1....				19

Total increase in field operations March 1 as compared with November 1, 1926. 123

AVERAGE GRAVITY AND AVERAGE PRICE PER BARREL OF OKLAHOMA CRUDE ON MARCH 5, 1927

	Gravity	Prod.	Posted Price	Total Value
Ada	35	211	$1.44	$303.84
Barnes	39	56	1.56	87.36
Billings	43	291	1.68	502.32
Blackwell-Vern'n	39	2,057	1.56	3,208.92
N. Braman	42	9,040	1.65	14,916.00
S. Braman	43	4,430	1.68	7,442.40
Bristow-Slick	30	3,210	1.29	4,140.90
Bristow-Slick	31	8,860	1.32	11,695.20
Bristow-Slick	32	6,910	1.35	9,328.50
Bristow-Slick	36	380	1.44	547.20
Bristow-Slick	38	420	1.53	642.60
Bristow-Slick	39	2,100	1.56	3,276.00
Bristow-Slick	41	4,800	1.62	7,776.00
Brock	34	270	1.41	380.70
Brock	35	615	1.44	1,266.30
Brock	37	135	1.50	1,468.80
Brock	39	270	1.56	421.20
Burbank	37	31,050	1.50	46,575.00
Burbank	38	13,700	1.53	20,961.00
Burbank	39	4,850	1.56	7,566.00
S. Burbank	38	1,160	1.53	1,774.80
Cement	34	450	1.41	634.50
Cement	35	1,000	1.44	1,440.00
Cement	36	300	1.47	441.00
Cleveland-Keystone	32	420	1.35	567.00
Cleveland-Keystone	34	390	1.41	549.90
Cleveland-Keystone	36	5,340	1.47	7,849.80
Cleveland-Keystone	39	815	1.56	1,271.40
Cleveland-Keystone	40	1,250	1.59	3,258.90
Comanche	33	123	1.38	3,428.60
Comanche	34	180	1.41	253.80
Comanche	35	180	1.44	259.20
Comanche	36	230	1.47	338.10
Cromwell	36	375	1.47	551.25
Cromwell	37	2,240	1.50	3,360.00
Cromwell	38	3,240	1.53	4,957.20
Cromwell	39	7,000	1.56	10,920.00
Cromwell	40	640	1.59	1,017.60
28-6w	28	101	1.23	124.23
Cushing	34	920	1.41	1,297.20
Cushing	35	1,150	1.44	1,656.00
Cushing	36	75	1.47	110.25
Cushing	37	2,975	1.50	4,462.50
Cushing	39	15,600	1.56	24,336.00
Cushing	40	920	1.59	1,462.80
Davenport	41	4,000	1.62	6,480.00
Duncan	29	170	1.26	214.20
Duncan	30	300	1.29	387.00
Duncan	31	520	1.32	686.40
Duncan	32	685	1.35	924.75
Duncan	33	750	1.38	1,035.00
Duncan	34	710	1.41	1,001.10
Duncan	35	850	1.44	1,224.00
Duncan	36	630	1.47	926.10
Duncan	38	285	1.53	436.05
Duncan	39	240	1.56	374.40
Duncan	40	220	1.59	349.80
Fox-Graham	27	44	1.20	52.80
Fox-Graham	28	700	1.23	861.00
Fox-Graham	29	700	1.26	882.00
Fox-Graham	32	935	1.35	1,262.25
Fox-Graham	33	2,780	1.38	3,836.40
Fox-Graham	34	3,930	1.41	5,541.70
Fox-Graham	35	1,330	1.44	1,915.20
Fox-Graham	37	785	1.50	1,177.50
Garber	42	580	1.65	957.00
Garber	43	1,869	1.68	3,139.92
Garber	44	4,810	1.71	8,226.10
Garber	45	5,570	1.74	9,691.80
Garber	46	5,070	1.77	8,973.90
Garber	47	680	1.80	1,224.00
Healdton	28	995	1.23	1,223.85
Healdton	29	2,000	1.26	2,520.00
Healdton	30	5,990	1.29	7,727.10
Healdton	31	1,990	1.32	2,626.80
Healdton	32	1,000	1.35	1,350.00
Healdton	33	2,990	1.38	4,126.20
Hewitt	32	1,340	1.35	1,809.00
Hewitt	33	7,150	1.38	9,867.00
Hewitt	34	1,570	1.41	2,213.70
Hewitt	35	560	1.44	806.40
Hubbard	38	5,760	1.53	9,619.20
Holdenville (Miscl.)	38	640	1.53	979.20
Jennings	33	750	1.38	1,035.00
Jennings	39	3,250	1.56	5,070.00
Kilgore	30	195	1.29	251.55
Knox	37	3,600	1.50	5,400.00
Knox	40	400	1.59	636.00
Loco	24	95	1.20	114.00
Loco	27	715	1.20	972.00
Loco	28	615	1.23	756.45
Loco	30	240	1.29	309.60
Loco	36	45	1.47	66.15
Masham-Ralston	40	170	1.59	270.30
Mehan-Ripley	40	3,150	1.59	5,008.50
Mervine	38	280	1.53	428.40
Milroy	29	475	1.26	598.50
Madill	37	115	1.50	172.50
Nowata	32	4,760	1.35	6,426.00
Okmulgee	36	20,000	1.47	29,400.00
Osage	33	585	1.38	824.85
Osage	34	14,350	1.41	20,233.50
Osage	35	7,700	1.44	11,088.00
Osage	36	7,900	1.47	11,613.00
Osage	37	1,850	1.50	2,775.00
Osage	38	1,400	1.53	2,142.00
Osage	39	1,300	1.56	2,028.00
Osage	40	160	1.59	254.40
Osage	51	750	1.92	1,440.00
Otstot	43	1,900	1.68	3,192.00
Is-3w Sholom Alechem	32	14,000	1.35	18,900.00
Papoose	36	355	1.47	521.85
Papoose	37	1,330	1.50	1,995.00
Papoose	38	1,550	1.53	2,371.50
Papoose	39	2,550	1.56	3,978.00
Papoose	40	840	1.59	1,335.60
S. Papoose	39	1,600	1.56	2,496.00
Perry	43	101	1.68	169.68
Ponca City	38	740	1.53	1,132.20
Robberson	19	440	1.20	528.00
Robberson	20	460	1.20	552.00
Robberson	21	345	1.20	414.00
Robberson	22	460	1.20	552.00
Robberson	23	540	1.20	648.00
Robberson	25	360	1.20	432.00
Robberson	26	270	1.20	204.00
Rogers Co.	32	1,640	1.35	2,214.00
Sand Springs	38	435	1.53	665.55
Seay	34	940	1.41	1,325.40
Seay	37	1,350	150	2,025.00
Shamrock, East	40	2,995	1.59	4,762.05
Seminole	41	300,000	1.62	486,000.00
Stroud	41	1,650	1.62	2,673.00
Thomas	42	1,750	1.65	2,887.50
Tonkawa, deep	43	18,600	1.68	31,248.00
Tonkawa, shal	42	7,900	1.65	13,035.00
Washington Co.	32	6,150	1.35	8,302.50
Watchorn	42	2,770	1.65	4,570.50
Weleetka	39	1,020	1.56	1,591.20
Wewoka	34	150	1.41	211.50
Wewoka	35	85	1.44	122.40
Wewoka	36	570	1.47	837.90
Wewoka	37	1,800	1.50	2,700.00
Wewoka	38	8,335	1.53	15,452.55
Wewoka	39	9,110	1.56	14,211.60
Yale-Meramec-Ingalls	33	290	1.38	400.20
Yale-Meramec-Ingalls	37	105	1.50	157.50
Yale-Meramec-Ingalls	39	4,100	1.56	6,396.00
Yale-Meramec-Ingalls	42	5,800	1.65	9,570.00

(Continued on Page 212)

March Crude Runs Same As February

Mid-Continent Refinery Operations First of Month Show Little Change Compared to Those of Last Month

By W. T. Ziegenhain

With the continuation of a rather slow market for all petroleum products the Mid-Continent refiners entered March with practically the same crude runs as the first of the previous month. What effect the crude price reductions since the first of March will have on the runs throughout the month is problematical and will depend upon the stability of the gasoline price. With refined oil prices continuing to weaken any advantage to the refiner as a result of the lower crude cost will be lost through increased runs unless the gasoline is stored. In turn, this will tend to hold the refined prices at a low level and with the coming of warm weather and high evaporation losses there are fewer advantages in following out a storage program at this time than presented on first thought.

RUNS TO STILLS IN MID-CONTINENT REFINERIES

	Bbls. Daily
1925	
April 1	383,150
May 1	398,940
June 1	423,950
July 1	440,350
August 1	427,382
September 1	407,690
October 1	415,575
November 1	383,225
December 1	375,979
1926	
January 1	390,200
February 1	385,845
March 1	365,990
April 1	368,310
May 1	391,355
June 1	415,450
July 1	410,070
August 1	407,475
September 1	419,995
October 1	408,975
November 1	417,575
December 1	403,450
1927	
January 1	403,625
February 1	418,595
March 1	418,920

MID-CONTINENT REFINING OPERATIONS
Table No. 1
(Based on Plants March 1, 1927, and February 1, 1927.)

	*No. Plants Mch.1	Crude Cap. (bbls.)	Crack. Cap. (bbls.)	Plants Oper. Mch.1	Runs to Stills Mch.1 (bbls.)	Plants Oper. Feb.1	Runs to Stills Feb.1 (bbls.)	Daily Inc. Mch.1
Oklahoma	50	259,800	96,050	43	180,345	46	176,870	3,475
N. C. Texas	41	174,900	50,450	34	94,975	35	92,075	2,900
‡Kansas	20	125,500	66,600	15	82,250	18	88,200	†5,950
No. Louisiana	5	50,000	18,400	4	40,550	4	41,400	† 850
Arkansas	10	34,000	12,600	7	20,800	7	20,050	750
Total	126	644,200	244,100	103	418,920	110	418,595	325

* Does not include plants shut down one year or longer.
† Decrease.
‡ Includes two Missouri plants.

Table No. 2
(Based on Plants March 1, 1927, and March 1, 1926.)

	*No. Plants Mar. 1, 1926	Crude Cap. Mar. 1, 1926 (bbls.)	Plants Opg. Mar. 1, 1926	Runs to Still Mar. 1, 1926 (bbls.)	Daily Inc. Mar. 1, 1927
Oklahoma	58	273,700	44	153,150	27,195
N. Cen. Texas	46	177,100	32	86,075	14,500
‡Kansas	23	130,500	18	80,195	2,055
North Louisiana	6	37,500	6	31,400	9,150
Arkansas	10	30,000	9	21,170	† 370
Total	143	649,200	109	365,990	52,930

* Does not include plants shut down one year or longer.
† Decrease.
‡ Includes one Missouri plant.

The crude runs on March 1 are shown in the accompanying table as 418,920 bbls. daily and are only 325 bbls. more than those of February 1. But this is 52,930 bbls. more than a year ago and the highest since September 1 of last year.

Although the runs for the past two months appeared totaled about the same there is a marked increase in the Oklahoma and North Central Texas p'ants, practically all of which is equalized in the decreased runs in the Kansas plants. Likewise, in analyzing the increase over the year by districts it is seen that 52 per cent of the 52,930-bbl. increase is being run in the Oklahoma plants and 26 per cent in the North Central Texas plants, with Arkansas showing a decrease of 370 bbls.

The crude capacity of the Mid-Continent plants has remained practically constant over the year while the number of plants operating has decreased as shown in the total of 109 plants on March 1, 1926, and 103 being shown for the first of March this year.

Oklahoma Operations

During the past month, three Oklahoma plants were shut down—the Gilmer refinery at Ringling which has a capacity of 1,500 bbls, the Sayre Oil & Refining p'ant at Sayre with a capacity of 500 bbls. and the Sinclair plant at Muskogee with 1,000 bbls. capacity. The loss in the runs at these plants was more than equalized by the increased runs at the Barnsdall refinery at Okmulgee, the Champlin refinery at Enid, the Cushing Refining & Gasoline Co.'s plant at Cushing and the Globe refinery at Blackwell.

North Central Texas

Of the North Central Texas plants, the Amarillo Refining Co.'s plant at Wichita Falls of 3,500 bbls. capacity, the Megargel Refining Co.'s plant of 2,000 bbls. capacity at Megargel and the Paris plant of the Paris Refining Co. with 250 bbls. capacity were shut down. The Primtex Refining Co. is operating its new plant at Grand Prairie and is specializing in the manufacture of industrial petroleum naphthas and high gravity gasolines. The Star Refining & Producing Co.'s plant at Fort Worth, which has been shut down since the fire in January, is being reconditioned and will be ready to operate about the middle of this month.

Major repair jobs on the distilling equipment of the Amarillo Producers & Refiners Corp.'s plant at Isom has been made and the runs to the still's have been set at 750 bbls. daily throughout March, the refined products to be sold through its own marketing division and transported in leased cars.

The leased refinery of the Anderson & Prichard Oil Corp., formerly operated as the Western Oil Co. refinery of Wichita Falls, was put into operation and was scheduled to run 1,000 bbls. per day for March. The McMillan Petroleum Co.'s new plant at Isom had been operating below capacity but during March it will be brought up to 3,800 bbls. daily. The Wilson Brothers Refining Co.'s plant at Wichita Falls also resumed operation on the first of this month and is running about 1,600 bbls. daily.

In addition to the starting up of these plants the crude runs tended to increase as the runs were boosted 500 bbls. daily at the following refineries: Amarillo Refining Co., Inc., at Amarillo, Noble Oil & Gas Co. at Burkburnett, Primrose Refining Co. at Wichita Falls and the Tidal Western Refining Co., also at Burkburnett.

Kansas

The crude runs of this section were reduced about 6,000 bbls. and were caused principally by the shutting down of the Barnsdall plant at Wichita, the Arkansas City Refining Co.'s plant at Arkansas City and the refinery of the Alliance Rubber Co. at Centropolis. This reduction was augmented by the lowering of the runs of the Standard Oil Co.'s plant at Neodosha 1,000 bbls.

North Louisiana and Arkansas

The refining operations have remained practically the same as those of last month, the only difference being in small changes in the crude run by the individual plants. Of those plants decreasing their runs the greatest increase is at the plant of the Crystal Oil Refining Corp. at Shreveport which is running 9,000 bbls. instead of 10,000 bbls, the runs one month ago. The Lion Oil & Refining Corp. plant at El Dorado, Ark., decreased its runs 600 bbls. in the runs at the Newark Refining Co.'s plant at El Dorado.

REFINERY OPERATIONS IN OKLAHOMA
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs March 1	Runs February 1
Anderson-Prichard Oil Corp., Cyril	1,500	1,200	1,200
Barnsdall Refineries, Inc., Barnsdall	5,000	3,500	3,500
Barnsdall Refineries, Inc., Okmulgee	6,000	4,700	4,000
Bell Oil & Gas Co., Grandfield	3,000	1,800	1,800
Bolene Refining Co., Enid	5,000	2,000	2,200
Cameron Refining Co., Ardmore	3,900	2,300	2,000
Canfield Refining Co., Yale	500	75	75
Champlin Refining Co., Enid	16,000	11,800	10,500
Continental Oil Co., Sapulpa	7,000	2,400	2,400
Cushing Refining & Gasoline Co., Blackwell	1,500	1,400	1,200
Cushing Refining & Gasoline Co., Cushing	2,500	2,100	1,500
Empire Refineries, Inc., Cushing	5,000	4,700	4,700
Empire Refineries, Inc., Okmulgee	3,000	3,000	3,000
Empire Refineries, Inc., Ponca City	7,000	7,500	7,500
Garber Refineries, Inc. (Omar), Garber	3,000	2,500	2,700
Gilmer Oil Co., Ringling	1,500	Shut down	800
Globe Oil & Refining Co., Blackwell	5,000	5,000	4,500
Illinois Oil Co., Cushing	3,000	250	300
Imperial Refining Co., Ardmore	6,000	3,000	3,000
Independent Oil & Gas Co., Okmulgee	4,000	3,000	3,000
Interocean Refining Co., Bristow	4,000	1,000	900
Lawton Refining Co., Lawton	1,000	Shut down	Shut down
Johnson Oil Refining Co., Cleveland	5,000	4,500	4,700
Marland Refining Co., Ponca City	30,000	26,200	26,000
Mecca Refining Co., Allen	1,500	Shut down	Shut down
Mid-Continent Petroleum Co. (Cosden), West Tulsa	36,000	24,000	23,000
Miller Brothers 101 Ranch, Marland	100	20	20
Oil State Refining Co., Enid	2,000	Shut down	Shut down
Oil State Refining Co., Allen	800	350	400
Oklahoma Asphalt Co., Wilson	3,000	Shut down	Shut down
Peppers Gasoline Co., Covington	1,000	700	700
Pierce Oil Corp., Sand Springs	10,000	6,500	6,500
Producers Oil Co., Bristow	1,500	1,000	1,300
Producers & Refiners Corp., West Tulsa	7,000	3,000	3,000
Pure Oil Co., Ardmore	6,500	2,000	2,000
Pure Oil Co., Muskoge	5,500	3,500	4,000
Riley Petroleum Co., Bristow	800	500	500
Rock Island Refining & Pipe Line Co., Duncan	2,500	1,500	1,850
Sayre Oil & Refining Co., Sayre	500	Shut down	75
Shaffer Oil & Refining Co., Cushing	10,000	10,000	10,000
Sun Oil Co., Yale	3,000	2,500	2,500
Sinclair Refining Co., Muskogee	1,000	Shut down	800
The Texas Company, West Tulsa	12,000	12,000	12,000
Texas Pacific Coal & Oil Co., Wynnewood	2,500	1,650	1,600
Tidal Refining Co., Drumright	10,000	8,000	7,750
Transcontinental Oil Co., Boynton	2,500	2,000	1,100
Transcontinental Oil Co., Bristow	6,000	4,200	4,000
Tonkawa Petroleum Co., Tonkawa	2,500	1,000	600
Western Oil Corp., Beckett	1,500	1,100	1,100
Yale Oil Corp., Yale	1,200	700	600
Total	259,800	180,345	176,870

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS
(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs March 1	Runs February 1
Amarillo Producers & Refiners Corp., Isom	2,000	750	750
Amarillo Refining Co., Amarillo	5,000	4,000	3,500
Amarillo Refining Co. (Miller plant), Wichita Falls	3,500	Shut down	2,000
American Refining Co., Wichita Falls	7,000	4,700	4,700
Anderson & Prichard Oil Corp. (Western), Wichita Falls	1,500	1,000	Shut down
Col-Tex Refining Co., Colorado	6,500	5,500	5,750
Continental Oil Co., Wichita Falls	7,000	4,800	4,500
Crystal Petroleum Co., Burkburnett	1,000	Shut down	Shut down
Dale Oil & Refining Co., Electra	2,500	1,800	2,200
Empire Refineries, Inc., Gainesville	5,000	4,000	4,000
Falls Refining Co., Wichita Falls	1,500	850	850
Gulf Refining Co., Fort Worth	15,000	6,400	6,400
Hagaman Refining Co., Tiffin	2,000	275	275
Humble Oil & Refining Co., Burkburnett	4,000	1,750	1,750
Iowa Park Producing & Refining Co., Iowa Park	2,500	1,200	1,300
Kent-Middleton Refining Co., Angus	3,000	1,900	2,000
Kent-Middleton Refining Co., Minerva	2,500	1,400	1,400
MacMillan Petroleum Co., Isom	4,500	3,800	800
Magnolia Petroleum Co., Fort Worth	12,000	7,200	7,200
Magnolia Petroleum Co., Corsicana	10,000	2,700	2,700
Megargel Refining Co., Megargel	2,000	Shut down	600
Noble Oil & Gas Co., Burkburnett	5,000	3,000	2,500
Olney Oil & Refining Co., Olney	1,200	1,100	1,500
Oriental Refining Co., Dallas	6,000	Shut down	Shut down
*Oriental Refining Co. (Trinity), Dallas	5,000	2,800	2,800
Orient Petroleum Co., Wichita Falls	2,500	600	300
Panhandle Refining Co., Wichita Falls	4,000	3,000	2,900
Paris Refining Co., Paris	250	Shut down	250
The Petroleum Corp., Electra	2,000	Shut down	Shut down
Primrose Refining Co., Wichita Falls	1,500	1,000	500
Primtex Refining Co., Grand Prairie	2,500	1,000	1,500
Simms Oil Co., Dallas	4,500	3,800	4,000
Star Refining & Producing Co., Fort Worth	1,800	Shut down	Shut down
The Texas Company, Dallas	15,000	9,700	9,700
Tidal Western Refining Co., Burkburnett	3,000	2,500	2,000
Texas Pacific Coal & Oil Co., Fort Worth	6,000	2,300	2,300
Transcontinental Oil Co., Fort Worth	5,000	3,500	3,500
Travis Refining Co., Burkburnett	750	350	350
Waggoner Refining Co., Electra	3,400	2,700	2,800

(Continued on Page 197)

To Build Longest Gas Line in World

Will Supply Texas Panhandle Product to Industries in Kansas City, Mo. To Cost $20,000,000

The longest gas line in the world—450 miles—is to be built to carry gas from the Texas Panhandle Field to supply the industries of Kansas City, Mo. The longest continuous lines now in use are believed to be those from Madison, W. Va., to Cleveland, Ohio, and Dryfork, W. Va., to Toledo, Ohio, which are each approximately 300 miles of 20 and 16-inch pipe. The Panhandle-Kansas City line will be 20 or 22 inches. The cost is estimated at $20,000,000.

Survey Completed

KANSAS CITY, Mo., Mar. 5.—R. S. Lord, president of the Hope Engineering & Supply Co. of Mount Vernon, Ohio, has arrived here after completing a trip over the proposed route for a natural gas pipe line from the Panhandle of Texas, and announces that his general survey shows the project to be entirely feasible.

The proposal to supply Kansas City with natural gas by the construction of the largest known natural gas project was announced by representatives of the Hope company, which has a tentative contract for building the line with The Texas Corporation and the Columbian Carbon Co.

Applications for franchises in the two Kansas Citys are being prepared and are expected to be filed within a few days. The gas supplied will be for industrial purposes only.

To Begin This Spring

If the negotiations are successful, according to Frank P. Fisher, gas engineer of the Hope organization, his company is ready to begin work when the spring construction season opens.

As far as possible the line will follow a direct route from the eastern end of the Panhandle gas-producing land to Kansas City. It will require a high-pressure pipe line 450 miles long, costing approximately $20,000,000.

It is said the new project will not interfere with the business of the Kansas City Gas Co., as the two fields, the residential and industrial, are entirely separate.

The company to ask the franchise is backed by the Texas Corporation (The Texas Company) and the Columbian Carbon Co. These companies control 150,000 acres of gas-producing land in the eastern end of the Texas Panhandle Field and will have available a production of 150,000,000 cubic feet of gas a day. There will be no financing necessary, as The Texas Corporation and the Columbian company will furnish the money.

The two essentials to the project are the franchises and assurance from big industrial users of sufficient demand to justify the pipe line expenditure. The prospective consumption specified as necessary to bind the two corporations to the construction of the line is 70,000,000 cubic feet a day.

To the industrial furnaces of Kansas City the new gas, the Kansas City Star is informed, would come at an average rate cheaper than natural gas first was brought to Kansas City from Iola, Kans., 25 cents. The charge on the commercial gas, based on the same manner of schedule as water rates, would begin at 30 cents and graduate to 17 cents, based on consumption.

The Hope Engineering & Supply Co. of Mount Vernon, Ohio, has been given a contract to build the pipe line, subject to assurance of an adequate business and the granting of necessary city permission to lay gas mains.

Frank P. Fisher, engineer of the Hope organization, has been commissioned by the presidents of the two supporting corporations to carry forward negotiations.

COLUMBIAN OFFICIAL CORROBORATES PLAN; AWAITING CONTRACTS

NEW YORK, Mar. 5.—Reid L. Carr, secretary of the Columbian Carbon Co., has authorized the following statement in confirming the report that the carbon company with The Texas Company was planning a gas line from the Texas Panhandle to Kansas City.

"The line will be built to supply industrial consumers of Kansas City alone and will not compete with existing lines supplying domestic household consumers. The preliminary survey indicates there is sufficient business to justify the line but work will not be started until contracts with industrial consumers have been closed reasonably assuring the success of the project. The line will probably be 20 or 22 inches although we cannot yet be certain on that point."

He will be assisted by Ralph E. Morrison, a former Kansas Citian.

Finished Next Year

If contracts of sufficient size are written in advance and the franchise obtained, construction would start when the spring construction season opens. The contract names Jnly 1, 1928, for the completions of the contract.

The projected pipe line company now is termed the Midland Plains Gas Co. Primarily formed to supply natural gas to industrial consumers, it might make provision for incidental demand in small towns along the route, but in Kansas City would not serve the residence or retail districts. A winter load arising from a large volume of domestic service might interfere with dependable year-round service to industries.

The commercial gas would be delivered at the city gate to a subsidiary company to distribute to industrial consumers in the manufacturing centers such as the Blue Valley district, Central Industrial district, Armourdale, Argentine, Northeast Industrial district, the Woodswether and Fairfax districts.

The pipe line, which would be some 3 feet underground, would carry a daily initial capacity of 100,000,000 cubic feet. With a length of 450 miles, it would be the longest single gas main construction ever undertaken at one time. The $20,000,000 cost estimate includes the gathering system in the fields, the distributing system in Greater Kansas City and the erection of seven compressor stations. Later the building of six additional compression stations would increase the capacity of the line to 150,000,000 cubic feet a day.

For the great gas-producing area of the Texas Panhandle, a field 130 miles long, a life of years is predicted. A score of years from now it still should be a great reservoir of gas, experts have predicted. The eastern section of the field dominated by the Texas and Columbian corporations is in Gray and Wheeler Counties. From there the line will be projected across Ellis, Woods and Woodward Counties in Oklahoma and Sedgwick County, Kansas, passing near Wichita and on in the straightest course toward Kansas City.

The route for such a line was established last year by Alfred J. Diescher and some associates. In Kansas City their activities were believed to have been the incentive for announcement that the Henry L. Doherty interests contemplated building a commercial gas line. The Doherty group seems to have done nothing beyond the announcement they had made a survey.

The largest users of commercial gas here would be the packing houses, refineries, soap works and possibly the utilities.

The Texas corporation has assets of $397,000,000. Amos L. Beatty is chairman and R. C. Holmes president of the corporation. The Columbian Carbon Co. has assets of $23,000,000.

Wichita Interested

Wichita, Kans., hopes to benefit by the new line which will extend northeast through Sedgwick County, coming within 1 mile of the south city limits of Wichita. It is thought probable that the Wichison Industrial Gas Co. will be able to tap it for an additional fuel supply. The Hope Engineering Co., with which the Wichison Industrial Gas Co. and the Larutan Fuel Co. were affiliated in the building of the line to Wichita, has been given contract to build the line.

"I don't know to just what extent our companies will be affected by this line," C. I. Bullock, general manager of the Wichison, said, "but I have an idea it will be very beneficial to the city of Wichita, and will give us an enormous increase in the volume of gas available for industrial purposes."

E.G.Seubert New Indiana President

E. J. Bullock and R. H. McElroy Chosen Vice Presidents at Annual Meeting. Doctor Burton Remains Director

Important changes in the executive officials featured the annual report of the Standard Oil Co. of Indiana. They further illustrated the company's policy of advancement within its own organization, the officers promoted having come up through the ranks.

For some time Dr. William M. Burton, president of the company, inventor of the Burton cracking process, has felt that after 37 years of service, he was entitled to a rest. The board announced that a compromise had been effected between Dr. Burton's desires and the company's needs, whereby he resigns as president, but remains as a director, to serve largely in an advisory capacity.

Dr. Burton has reached the age of 61. He received his A. B. degree from Western Reserve University in 1886, and his Ph. D. degree from Johns Hopkins in 1889. In June, 1890 he entered the employ of the company as a chemist. He became general superintendent in 1895, a member of the board of directors in 1911, and served as vice-president from 1915 until October 4, 1918, when he became president.

Dr. Burton's resignation brings to the presidency E. G. Seubert, secretary-treasurer of the company. Mr. Seubert is 50 years of age and was virtually reared within the company. He had unrivaled opportunities of gaining an intimate knowledge of the workings of all departments of the company.

The board also announced the election to the positions of vice-presidents of R. H. McElroy, traffic manager, and E. J. Bullock, director of purchases, who have been members of the board since 1922.

Edward J. Bullock

Mr. Bullock has a service record of 37 years with the company, starting as an office boy in the company's office at Milwaukee, Wis., in 1889. He was transferred to the Chicago office in 1904, as assistant manager of the lubricating oil sales department and two years later was promoted to manager in that department. In 1915, he became manager of all sales for the Chicago division. The petroleum products purchasing department of the Indiana company was organized in 1919, and he was made manager. In 1921, he was made director of all purchases. In 1922, he was elected to the board of directors.

Mr. McElroy started work at the Standard Oil Co. of Indiana as chief rate clerk in August, 1906, was promoted to assistant traffic manager in May, 1911, and to traffic manager in January, 1917. In May, 1922, he was elected to the board of directors and put in direct charge of all traffic affairs. This tonnage amounts annually to approximately 25,000,000 bbls. of gasoline, 6,000,000 bbls. of refined oil, besides lubricating oils, petroleum specialties, asphalt and road oils. The amount paid annually to the railroads for transportation or freight rates is approximately $40,000,000.

Industrial Relations

Dealing with personnel the report said: It has long been the thought of the board of directors that the success or failure of any business can be accurately predicted according to the loyalty and

(Continued on Page 86)

Supreme Court Clarifies Police Power

Doctrine That Legislature May, by Its Declaration, Extend This Power Is Abandoned. Effect on Oil Industry

By Phillip Kates

In all the discussion of proposed legislation under the police power of the states, for the control of the oil industry, it seems to be assumed that the main thing to be done is to evolve a proper formula expressing what is desired, and then enact that formula.

Thus, in the Marland bill, it was provided that natural gas might be used in Oklahoma for certain purposes, "and no other." In the old Oklahoma Natural Gas Case (221 U. S. 229) in which the State of Oklahoma sought to prevent the piping of natural gas out of the State, the Supreme Court of the United States made some rather pertinent remarks concerning the nature of private property; but it has been assumed that these old property rights were swept away in later decisions of that court. In the gas case the court said of the Oklahoma Statute, which forebade the shipping of gas out of the State: "It does not alone regulate the right of the reduction to possession of the gas, but when the right is exercised, when the gas becomes property, takes from it the attributes of property,—the right to dispose of it; indeed, selects its market and reserves it for future purchasers and use within the State, on the ground that the welfare of the State will thereby be subserved. The results of the contention repel its acceptance. Gas when reduced to possession is a commodity; it belongs to the owner of the land; and when reduced to possession it is his individual property, subject to sale by him, and may be a subject of intrastate commerce or interstate commerce."

Oil Industry Legislation

But legislation regulatory of the oil industry seems to proceed upon the theory that whatever safeguards the private rights of oil producers and lease and land owners have had under prior decisions have been destroyed by the immediate necessity of conserving the petroleum resources of the nation. And the further theory that waste is to be determined not by facts and experience, but by a form of words, enacted by a legislature.

Thus, in the Marland bill, after definitions of waste it was provided; "In addition to the foregoing, natural gas taken or permitted to flow from any oil well shall be deemed to be wasted unless the gasoline content shall be extracted therefrom, and the residue gas shall be used for heat, light or power purposes, or the making of carbon black or returned to an oil or gas sand for the purpose of building up pressure."

It may be that the escape of natural gas from oil wells, except under the conditions above laid down, would in fact be waste; or it might be that it would not be waste; but the legislature cannot by definition make improper that which is in fact a proper method of operation.

Recent Decision

After a number of decisions, in which it almost seemed that property rights were being swept away, the Supreme Court of the United States on Monday, February 28, 1927, clarified the situation again.

Whenever the old land marks seem about to be removed, the Supreme Court promptly sets them up again.

The State of New York had passed a law preventing the reselling of theater tickets at more than 50 cents above the price printed on them; and the original selling price was required to be printed. The statute specifically declared that the public amusement business was one in which the public is interested; and therefore that the protection of the public requires that there shall be no speculating in tickets.

Tyson & Brother, ticket brokers, brought suit against the district attorney of New York to restrain the enforcement of the act. They alleged that the penalty for violation was so severe, that they could not run the risk of violating it to permit a test prosecution, for if they lost they would be out of luck.

As the case involved a state statute, three Federal judges sat at the first hearing; and denied relief, holding the act valid.

But the Supreme Court of the United States held that it was clearly beyond the police power of the State, and laid down again the rules governing the limitation of the states.

The most important is the statement of the present attitude of the court as to what constitutes a "public interest" which may be the basis of the exercise of the police power.

"Public Interest"

The regulatory power over businesses impressed with a "public interest" is large; but the regulation of private business is rather narrowly confined. The tendency of forward-looking reformers and of many legislatures has been to impress the "public interest" by a legislative declaration. But this cannot be done. "The power to regulate property," says the court in the Tyson case, "services or business can be invoked only under special circumstances; and it does not follow that because the power may exist to regulate in some particulars it exists to regulate in others or in all."

And whether or not a business is impressed with a "public interest" comes from certain broad legal rules, which the court again states. As the court points out the doctrine was first announced in this country in Munn vs. Illinois, where the regulation of charges in grain elevators was sustained. These grain elevators were so large; they so stood at the very gateway of commerce; they practically took toll of every one who had grain to sell. And so, said the court they were impressed with a public interest. The same thing was true of the stock yards.

But it is the fact, and not the declaration of the statute that makes the public interest. It may be that in time the oil-producing business will be in such a condition that it may be impressed with a public interest, as the pipe lines are today. But that will be because of conditions that arise before the statute is passed, and not because of the statute. As has been pointed out in these columns, it is the facts that count.

"And finally," said the Supreme Court in the Tyson case, "the mere declaration by the legislature that a particular kind of property or business is affected with a public interest is not conclusive upon the question of the validity of the regulation. **The matter is one which is always open to judicial inquiry.**"

The court referred to Wolff vs. Industrial Court, 262 U. S. 522, where a statute of Kansas requiring compulsory arbitration of wage questions in the packing industry was held invalid.

Business in Three Classes

The court called attention to the fact that the doctrine of public control of business impressed with a public character, was laid down 200 years ago by Lord Hale; and apparently, the broad principles still govern the interpretation of the rule. For the court in the Tyson case refers again to the Wolff case, and says that the business characterized with a public interest may be divided into three classes:

1. Those which are carried on under authority of the public; as railroads, common carriers and public utilities.

2. Exceptional business, recognized traditionally as being impressed with a public interest; such as keepers of inns, grist mills, and cabs.

3. Businesses not originally public, but which because of their peculiar relation to the public are subject to some sort of regulation. This latter class it may be assumed may change from time to time. So sanitary inspection laws; safety appliance laws, and others of similar nature may be sustained.

The court again states the proposition: "The significant requirement is that the property shall be devoted to a use in which the public has an interest, which simply means that it shall be devoted to a public use. Stated in another form a business or property, in order to be affected with a public interest must be such or so employed as to justify the conclusion that it has been devoted to a public use and its use is thereby in effect, granted to the public."

But the mere fact that the public may be vitally interested does not mean that the owner of the business thereby subjects it to the public use. "A business," says the court, "is not affected with a public interest merely because it is large, or because the public is warranted in having a feeling of concern in respect of its maintenance. Nor is the interest such as arises from the mere fact that the public derives benefit, accommodation, ease or enjoyment from the existence of operation of the business, and while the word has not always been limited narrowly as strictly denoting 'a right' that synonym more nearly than any other expresses the sense in which it is to be understood."

It is apparent therefore, in spite of all of the recent decisions of the Supreme Court, the property rights protected by the Fourteenth Amendment are still recognized. The doctrines laid down in the cases construing the Adamson Law (Wilson vs. New 243 U. S. 332) the Rental cases (Block vs. Hirsch 256 U. S. 135; Marcus Brown Co. vs. Feldman 256 U. S. 170) are strictly limited to those cases.

An the court announces the principle that except in cases of grave emergency it will stand by the Fourteenth Amendment, and will strictly hold the police power to the traditional businesses in which the public have a recognized interest.

Power of Legislature

Even in laws regulating the production of food, the court says, referring to the Wolff case: "The power of a legislature under any circumstances to fix prices or wages in the business of preparing and selling food was seriously doubted, but the court concluded that, even if the legislature could do so in a public emergency, no such emergency appeared."

The Supreme Court serves notice that laws passed under the police power should be carefully considered before they are passed. The idea that evils can be remedied by laws which strike down property rights or constitutional principles will not be tolerated. "But," says the court, "evils are to be suppressed or prevented by legislation which comports with the Constitution, and not by such as strikes down those essential rights of private property protected by that instrument against governmental interference."

And one sentence of the opinion of the court might well be applied to the ideas of those who would by legislation enforce against every one a theory which might possibly be beneficial to a few. "It is not permissible," said the court, "to enact a law which in effect spreads an all-inclusive net for the feet of everybody upon the chance that, while the innocent will surely be entangled in its meshes, some wrongdoers may also be caught."

To make applicable to every oil well regulations that might properly be applied to some, on the theory that by spreading a net for the feet of all, everyone will be caught, and then the good may be released, is surely against the whole theory of our Government.

The Supreme Court has served notice that sanity and the safeguard of property rights must be at the base of police power legislation. The ideas have been drawn from the Adamson Law case, and the Reng case, and the recent case of the Euclid Zoning law, may well be confined to those cases. They certainly will not be extended without very serious cause.

But the fact that the oil-producing industry today may not be such a business as to fall under the absolute control of the police power does not mean that it may not some day do so.

(Continued on Page 164)

Only 37 Per Cent Free Oil in Seminole

Committee on Curtailment Suggests 20 Per Cent Reduction in Potential Production for 30 Days

By J. L. Dwyer

The Seminole Field is again producing around 300,000 bbls. daily owing to the drilling in of a few additional wells. During the past 10 days the removal of air-gas lift decreased the output of the field to 287,000 bbls. The main reason for the decrease was that it was either a case of shutting down the production, or placing the oil on the ground for Seminole storage is almost filled to capacity, and the tanks which are now under construction require 3 weeks to finish owing to the soft condition of the ground.

At some time during the next three weeks, additional storage facilities should be completed which will permit the field to be thrown wide open for at least one or two days, and at that time a better idea of the possibilities of the field may be obtained.

The Seminole Field is operated chiefly by companies having their own refining facilities or affiliations, and it is interesting to observe that out of the total companies in the field, only nine have no connections of this sort.

Free and Controlled Oil

The following table of production showing the daily average output of the field for the week ending March 4, gives an idea of the amount of free and controlled oil produced within the limits of the field. In making this compilation some departures from standard figures have been made, as in the case of the Independent Oil & Gas Co. and others. The Independent has its own cycle of refining and transporting, but its output in the field is in excess of this, and for that reason half of its production has been listed as free oil. The same has been done with the production of the Indian Territory Illuminating Oil Co. although normally this concern sells the majority of its production to outside purchasers. The Empire Gas & Fuel Co. owns the controlling interest in the concern. In the case of the Mid-Continent Petroleum Corp. a part of its production is being handled by the Prairie Pipe Line Co. and is listed as free oil. The Pure Oil Co.'s output is also split into free and controlled oil, as its transportation facilities will not permit handling its huge production.

Out of the 299,000 bbls. of oil produced, it will be noticed that 112,324 bbls. is free oil, or oil which is normally offered to the crude purchasing companies for sale. The balance is oil produced by concerns having their own refining facilities and is oil which would, under normal circumstances, not be offered to these concerns for sale.

SEMINOLE PRODUCTION

Company—	Prod.	Free	Controlled
Amerada	26,412	22,832	3,580
Atlantic O. P.	6,350	6,350	.....
Barnsdall	16,691	.....	16,691
Carter	37,770	.....	37,770
Empire	806	.....	806
Gypsy	20,968	.....	20,968
Independent et al	9,176	4,588	4,588
I. T. I. Oil Co.	21,611	10,305	10,306
Roxana-Kingwood	2,437	.....	2,437
Roxana	1,124	.....	1,124
Magnolia	2,258	.....	2,258
Mid-Cont. Pet. Corp.	13,310	3,127	10,183
Mid-Kansas	153	153	.....
Philmack et al	2,400	2,400	.....
Phillips Pet. Co.	300	300	.....
Prairie	22,268	.....	22,268
Pure Oil	26,974	13,487	13,487
Searight et al	1,680	1,680	.....
Sinclair	29,335	.....	29,335
Slick	19,292	19,292	.....
Superior	6,232	6,232	.....
The Texas Company	120	.....	120
Tidal-Osage	18,270	9,135	9,135
Turman Oil	10,783	10,783	.....
Twin State	160	160	.....
Earlsboro shallow	3,000	1,500	1,500
Total	299,880	112,324	186,556

Committee on Curtailment

The committee of the companies operating in the field has formulated another plan to further curtail and prevent any waste of oil in the field. Under the proposed plan which has not yet been accepted by the companies, an additional curtailment of 20 per cent of the field's production would be placed in effect for a period of 30 days. Umpire Ray Collins who has been in charge of the field during the period of trouble is continuing to police the territory and eliminate any waste of oil but thus far has found no need to enforce his authority as the companies having no storage facilities have voluntarily curtailed their output.

The field has approximately 265,000 bbls. of daily pipe line capacity and the following table shows the disposition of a normal day during the past week. Out of the 288,000 bbls. handled, about 10,000 bbls was run to storage in the field, and the balance shipped by tank cars. The movement of crude oil by tank cars has become very popular in the region, and at this time strenuous efforts to construct additional loading racks and sidings is under way.

SEMINOLE PIPE LINE RUNS

Amerada Pipe Line (to Storage)

Amerada Pet. Corp.:		
Anderson	6,017	
Fixico	894	
Killingsworth	827	
Rentie	1,029	
Total	8,767	8,767
Barnsdall Pipe Line		
Barnsdall Oil Co.:		
Carter	8,820	
Jones	6,916	
Total	15,736	15,736
Consolidated Pipe Line Co.		
Barnsdall Oil Co.:		
Carter	3,298	3,298
Mid-Continent Pet. Co. Pipe Line		
Mid-Continent Petroleum Corp.:		
Grayson	5,380	
Rentie	2,984	
Tayeche	3,916	
Sinclair Oil & Gas Co.:		
Fixico	4,590	
Total	16,870	16,870
Empire Pipe Line Co.		
Indian Terr. Illum. Oil Co.:		
Bowlegs	3,074	
Davis	1,694	
Total	4,768	4,768
Gulf Pipe Line Co.		
Gypsy Oil Co.:		
Butler	1,979	
Carter	2,809	
Cudjo	2,279	
Fixico	237	
Harjo	1,785	
School land	5,018	
Wolfe	9,085	
Total	23,192	23,192
Independent Pipe Line Co.		
Independent Oil & Gas Co.:		
P. Fixico	1,368	
Independent-Garland:		
T. Fixico	3,949	
Independent-Interocean:		
Jones	3,085	
Total	8,402	8,402
Magnolia Pipe Line Co.		
Atlantic Oil Prod. Co.:		
Cudjo	1,690	
Magnolia:		
Franks	1,359	
Pure Oil Co.:		
Strothers	927	
T. B. Slick:		
Franks	22,378	
Giblets	826	
Total	27,180	27,180
Oklahoma Pipe Line Co.		
Independent-Garland:		
T. Fixico	418	
I. T. I. Oil Co.:		
Bowlegs	214	
Superior Oil Co.:		
Cudjo	3,827	
Carter Oil Co.:		
B. Carter	320	
F. Carter	719	
J. Carter	289	
Cudjo	3,614	
Davis	3,479	
Frazier	3,812	
Grisso	7,479	
G. Killingsworth	4,368	
M. Killingsworth	1,463	
Knappenberger	3,135	
Lukes	6,934	
Stewart	4,317	
Strothers	3,426	
Total	47,814	47,814
Ozark Pipe Line Co. (Roxana)		
Amerada Pet. Corp.:		
Fixico	1,738	
Rentie	876	
I. T. I. Oil Co.:		
Bowlegs	848	
Roxana Pet. Corp.:		
Harber	837	
Tidal-Osage Oil Co.:		
Carter	783	
Mahardy	1,689	
Total	6,771	6,771
Prairie Pipe Line Co.		
Amerada Pet. Corp.:		
Anderson	2,973	
Atlantic Oil Prod. Co.:		
Cudjo	3,649	
I. T. I. Oil Co.:		
Livingston	5,074	
Pure Oil Co.:		
Strothers	2,819	
Tidal-Osage Oil Co.:		
Fixico	6,012	
Tayeche	2,569	
Prairie Oil & Gas Co.:		
Carter	103	
Gross	339	
Kinkade	8,813	
Spencer	408	
Strothers	11,261	
Total	44,020	44,020
Pure Oil Co.		
Pure Oil Co.:		
Strothers	15,128	15,128
Shaffer Oil & Ref. Co.		
Amerada Pet. Corp.:		
Killingsworth	412	
Pure Oil Co.:		
Strothers	3,289	
Total	3,701	3,701
Sinclair Pipe Line Co.		
Amerada Pet. Corp.:		
Anderson	1,108	
Philmack Oil Co. et al:		
Butler	1,067	
Sinclair Oil & Gas Co.:		
Cudjo A	17,479	
Cudjo B	14,253	
Polly	2,667	
Turman Oil Co.:		
Cudjo	913	
Total	37,487	37,487
The Texas Pipe Line Co.		
Amerada Pet. Corp.:		
Fixico	1,749	
Rentie	3,862	
Atlantic Oil Prod. Co.:		
Cudjo	1,213	
Mid-Continent Pet. Corp.:		
Grayson	3,151	
Philmack Oil Co.:		
Butler	1,489	
Tidal-Osage Oil Co.:		
Fixico	512	
Turman Oil Co.:		
Cudjo	2,312	
Grisso	1,683	
Total	15,971	15,971
Tidal Pipe Line Co.		
Amerada Pet. Corp.:		
Fixico	1,417	
Tidal-Osage Oil Co.:		
Fixico	6,687	
Mahardy	811	
Total	8,915	8,915
Grand total		288,020

Pipe Line Situation

The Standard Oil Co. of New Jersey, at present the largest potential producer of oil in Oklahoma and one of the largest purchasers of crude is unable to move all its Oklahoma oil to its refineries. Its purchases and potential production approximate 130,000 bbls. a day. It is making use of the full capacity of the lines of the Oklahoma Pipe Line Co. and the Louisiana Pipe Line Co. to get Oklahoma-Kansas oil south, and the Prairie Pipe Line Co. is shipping north 20,000 bbls. a day. The remainder is being stored. Recently the Carter Oil Co., the Standard's Oklahoma producing and purchasing subsidiary, offered the Prairie Pipe Line Co. a tender shipment of 10,000 bbls. in addition to what the Prairie is already transporting, but the business was declined because the Prairie is handling all the oil its lines will carry. The Prairie's shipments north and east in February averaged 169,151.01 bbls. per day, the largest volume of business the company has done since 1920.

It was its inability to take care of all of its own oil without sacrifice to producers from whom it is purchasing oil

(Continued on Page 207)

SPECIAL MEETING IS PLANNED FOR MICROPALEONTOLOGISTS

The program for the annual convention of the American Association of Petroleum Geologists which will be held in Tulsa, Okla., March 24, 25 and 26, has been crowded so full that it has been found necessary to arrange for a meeting of the micropaleontologists and others engaged in the general microscopic examination of drill cuttings to be held March 23, the day before the main convention gets under way. This will offer an opportunity to men and women from all parts of the United States to bring together samples and fossils from many parts of the country for comparison and correlation. It is in this way that the formations encountered by the drill from widely separated areas are correlated and identified. The science of petroleum geology is indebted to this line of research for many of its most outstanding advancements. Not until very recent years has the value of this work been recognized by the oil industry. Nearly all of the larger oil companies now have specially trained men who spend all of their time making microscopic studies of drill cuttings. The thing that has made it possible for these men and women to accomplish so much in the short time during which they have been engaged in this work is the very fine spirit of cooperation among them. They discuss their mutual problems in a very frank and open manner. They have gladly offered and accepted criticism.

The special meeting offers a most valuable opportunity to those who have had little experience in this line of work. By discovering how the other fellow attacks his problems they greatly increase the value of their work. Years of fruitless effort may be saved. This meeting will probably be attended by several of the country's foremost scientists in the field of micropaleontology. However, the success of the meeting is not dependent upon the presence of such men. There are many younger men in the Mid-Continent Field whose work has been recognized to be of sufficient merit to command the attention of all who may attend.

Alex W. McCoy, of Denver, Colo., president of the association, has called a meeting of the general business committee of the association, which will also convene in Tulsa on the day before the main convention. This committee will meet in the Mayo Hotel at 8 p. m., March 23, for the purpose of considering ways and means of improving the work of the association, and to draft any resolutions thought necessary to present to the association at large. This committee represents a perfect cross-section of the membership of the association. All oil-producing areas from California, to New York and two foreign countries are represented by one or more of its 39 members.

It is anticipated that the deliberations of this general committee will probably be more extensive than any for several years. The increase in membership of the association has been such as to make it necessary for the executive committee to establish a permanent office and employ a business manager and assistants. This office was established in Tulsa, July 1, 1926, and J. P. D. Hull of Shreveport, La., was put in charge. This change in the administrative affairs together with the general growth will necessarily call for many changes of policy which will come up for consideration at this time.

Excess Gasoline Output a Menace

Dangers of Over-Production Pointed Out at Western Refiners Meeting. P. M. Miskell and Other Officers Re-elected

By C. O. Willson

The refining industry as a unit should keep its plant output in line with current demand, taking into consideration the seasonal changes in consumption.

A refiner is not justified in expanding his manufacturing operations until he has assured himself of an outlet for his products at a price which will assure profitable operation. Failure to do this means that his products will be sold at distress prices which are reflected in the lowering of the entire market structure.

As long as there are independent refiners and jobbers in the oil business there will always be an open tank car in the sale of gasoline and other products. Since this situation is inevitable, the sellers as represented by the refining industry should see that market quotations are based on actual prices received for all of their output and not on a small per cent of the total sold at distress prices.

Roy L. Jones
President of the Panhandle Refining Co., Wichita Falls, Tex., re-elected vice president of the Western Petroleum Refiners Association

The foregoing were some of the conclusions of refinery executives at the meeting of the Western Petroleum Refiners Association held March 3 at the Muehlbach Hotel, Kansas City. Approximately 50 executives representing refinery organizations in the Mid-Continent Field attended the one-day meeting which took the place of the three-day annual convention of former years.

OTHER PICTURES

Pictures of other officers of the W. P. R. A. will be found in this issue as follows: P. M. Miskell, page 122; C. L. Henderson, page 94; George D. Locke, page 132.

At the close of the meeting the association re-elected all of its officers with only a few changes made in the association's executive committee and the board of directors. At a meeting of the latter Howard Bennette, managing director, for his fourth year, was placed in active charge of the association's activities.

The meeting was called primarily to discuss the tank car marketing problem especially as it related to the publication of quotations. In discussing this matter, however, practically every problem affecting the Mid-Continent refiner from the purchase of crude supplies to the retail distribution of gasoline was touched upon by one or more speakers.

Committee Report

The discussion hinged around a lengthy report of a committee appointed last December to conduct an investigation relative to tank car markets. This committee consisted of C. L. Henderson, Vickers Petroleum Co., Wichita, Kans., chairman; E. H. Eddleman, Continental Oil Co., Wichita Falls, Tex.; L. B. McCammon, Transcontinental Oil Co., Tulsa; S. C. Collins, Marland Refining Co., and G. G. Woodruff, Roxana Petroleum Corp.

The committee made a thorough study of the subject but in reporting stated that the matter was so complex and important, that the investigation should continue before final recommendation was made. P. M. Miskell, president of the association, appointed another committee to continue the investigation consisting of Mr. Henderson, chairman; D. W. Moffitt, Mid-Continent Petroleum Corp., and L. R. Crawford of the Producers & Refiners Corp.

Too Much Gasoline

It was apparent from the discussion that there was no single "cure all" for the ills of the refining industry in the Mid-Continent Field. Outside of the special problem of tank car quotations, the phase most emphasized was the danger of producing too much gasoline, due not only to increasing the crude runs to stills at refineries but also the improvement of refinery processing which has very materially increased the gasoline yields from crude.

It was contended that constant lowering of gasoline prices during the past months was a development of this failure to limit output in line with the demand. The folly of installing expensive new equipment to reduce operating costs and then overproducing to the point where it was necessary to sell at a loss was pointed out. The storing of crude when necessary to prevent an overproduction of gasoline was recommended.

The discussion also emphasized the desirability of the executives of a company making the sales price for the day rather than the sales department.

As one phase of the marketing problem it was brought out that in fighting for business in territories which border the natural market for Oklahoma Group 3, refiners were in hot competition for business and that the low prices made there were eventually reflected in the price prevailing over all the natural territory of the group. It was contended that unless refiners could sell in this border line territory at a profit they would do better to pass up entirely the small gallonage they could obtain at cut prices there.

Howard Bennette
Managing director of the Western Petroleum Refiners Association.

OFFICERS AND DIRECTORS OF W. P. R. A. FOR 1927

Officers

President, P. M. Miskell, Empire Refineries, Inc., Tulsa, Okla

Vice presidents, Roy B. Jones, Panhandle Refining Co., Wichita Falls, Tex.; George D. Locke, Barnsdall Refineries, Inc., Chicago, Ill.; C. L. Henderson, Vickers Petroleum Co., Wichita, Kans.

Directors

H. T. Ashton, Lubrite Refining Co., St. Louis, Mo.
V. E. Bolene, Bolen Refining Co., Enid, Okla.
D. E. Buchanan, Chestnut & Smith Corp., Tulsa, Okla.
Walter K. Campbell, Western Oil Corp., Wichita Falls, Tex.
Samuel C. Collins, Marland Refining Co., Ponca City, Okla.
E. F. Conners, Independent Oil & Gas Co., Tulsa, Okla.
L. R. Crawford, Producers & Refiners Corp., Denver, Colo.
A. L. Derby, Derby Oil Co., Wichita, Kans.
E. H. Eddleman, Texhoma Oil & Refining Co., Wichita Falls, Tex.
A. F. Garrett, Tidal Refining Co., Tulsa, Okla.
E. W. Goebel, Manhattan Oil Co., Kansas City, Mo.
John L. Gray, Shaffer Oil & Refining Co., Tulsa, Okla.
R. R. Irwin, White Eagle Oil & Refining Co., Kansas City, Mo.
E. D. Levy, Pierce Petroleum Corp., St. Louis, Mo.
L. B. McCammon, Transcontinental Oil Co., Tulsa, Okla.
D. W. Moffitt, Mid-Continent Petroleum Corp., Tulsa, Okla.
C. C. Peppers, Champlin Refining Co., Enid, Okla.
F. A. Pielsticker, Skelly Oil Co., Eldorado, Kans.
J. E. Shatford, Ouachita Valley Refining Co., El Dorado, Ark.
H. A. Trower, Phillips Petroleum Co., Bartlesville, Okla.
J. L. Walsh, Continental Oil Co., Kansas City, Mo.
G. G. Woodruff, Roxana Petroleum Corp., St. Louis, Mo.
F. W. Burford, Crystal Oil & Refining Co., Shreveport, La.
Sheldon Clark, Sinclair Refining Co., Chicago, Ill.
J. B. Edwards, White Star Refining Co., Wood River, Ill.
John McEanes, Kanotex Refining Co., Arkansas City, Kans.
Robert H. McElroy, Jr., Pure Oil Co., Chicago, Ill.
Edgar J. Marston, Texas Pacific Coal & Oil Co., Fort Worth, Tex.

Executive Committee

The executive committee consists of the association officers as ex-officio members and the following refiners who are also members of the board of directors: Samuel C. Collins, E. H. Eddleman, E. W. Goebel, John L. Gray, R. R. Irwin, F. A. Pielsticker and Sheldon Clark.

HIGH POINTS IN COMMITTEE REPORT AT WESTERN REFINERS CONFERENCE

As long as the refiners are dependent on the jobbers for an outlet for material, the open market will exist.

The refiners could not dispense with the open market, even if they so desired.

The open market as reported on closed transactions will always probably exert some influence on the market of the moment.

The open market is of tremendous importance, not so much by virtue of the sales in that market, but by reason of its influence on the volume that moves on contract and the influence it may exert on tank wagon prices when drastically out of line.

An accurate report of the open market is a real necessity and refiners should use every effort to make this record complete and correct in all respects.

The committee believes refiners should give equal weight in their price-determining policies to the open market that prevails by reason of competition or other factors and to the price to which they are entitled by the particular price schedules for crude and gasoline that prevailed at the time the price is to be determined.

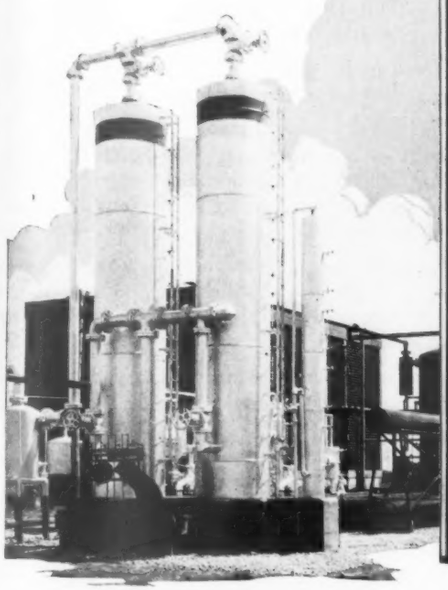
The committee believes that supply is within the control of refiners, but that demand, or at least profitable demand, is fairly stable and that a consideration of both prices as they should be and prices as they actually exist, in conjunction with a consideration of the physical condition of the industry with respect to rate of manufacture and stocks, should indicate when advances and recessions in price or expansion or curtailment in operations are warranted by the factors at hand.

For the purposes of the refiners, we believe an accurate picture of the spot, or open market, can be obtained by a range of prices based on carload sales to customers for resale by tank wagon or to consumers; that clearly defines the quality of products sold at the range of prices shown and excludes prices on goods sold at a reduction on account of failure to fully comply with all requirements of that quality; that excludes prices on goods sold on contracts at contract prices and thus excludes all prices based on speculation.

Another method would be for all refiners to report their current sales on

(Continued on Page 197)

When you are considering Absorber Efficiency—the answer is—conclusively NEWTON



Ask the other fellow
Will he guarantee the following?
Highest Efficiency,
Two-pound pressure drop at capacity,
No increased pressure drop due to fouling,
Continuous operation without plugging,
Will he meet the low price established by Newton?
Hinged steel bottoms for economy, ease, and safety in erection,
Steel ladders from top to bottom.
Price on request.
A comparison will save you money and give you the highest rated daily capacity throughout the year.
Our factory is open to you or your engineers at all times.
Our guarantees are positive.

Write for the complete story of the "Profit Process."

Representatives
Hurley Brothers, Kennedy Bldg., Tulsa, Okla.
The National Supply Co., General Office: Toledo, O. and all stores

Foreign Representatives:
The National Supply Corp., 120 Broadway, New York

Newton Process Is the Profit Process

(NO ROYALTY ATTACHED)

NEWTON PROCESS MANUFACTURING COMPANY

FULLERTON, CALIFORNIA

The OIL and GAS JOURNAL

PRODUCING REFINING MARKETING

Published Weekly by
THE PETROLEUM PUBLISHING COMPANY
114-116 West Second Street
TULSA, OKLA.

Established as an International Publication in 1910 by Patrick C. Boyle

President - - - - - - - - - - - Frank T. Lauinger
Vice President and General Manager - - Robert W. Egan
Secretary-Treasurer - - - - - - - - W. T. Bryan
Editor - - - - - - - - - - - - James McIntyre
News Editor - - - - - - - - - - Andrew M. Rowley
Associate Editor - - - - - - - - - W. T. Anderson
Refinery Editor - - - - - - - - - - C. O. Willson
Technical Editor - - - - - Charles K. Francis, Ph.D.
Advertising Manager - - - - - - - - Clarence Morris
Circulation Manager - - - - - - - - J. P. Mulkern

DISTRICT ADVERTISING OFFICES

C. L. CAIN - - - 30 Church Street, NEW YORK CITY
E. KLAPPENBACH, 1328 Peoples Gas Bldg., CHICAGO, ILL.
C. F. TOPE, 421 Union Mortgage Bldg., CLEVELAND, OHIO

TERMS OF SUBSCRIPTION
(By Mail, Postage Prepaid)

Single copies - - - - - - - - - $ .15
Three months - - - - - - - - - $2.00
Six months - - - - - - - - - - $3.00
One year (in United States) - - - $6.00
One year (in Canada) - - - - - $7.00
One year (foreign countries) - - - $7.00

ADVERTISING RATES ON APPLICATION
Telephones: 6291-6292-6293
Remittances by Checks, Drafts, Express or Postal Money Orders should be made payable to
The Petroleum Publishing Company
Cable address, "Oilgasnal"

MEMBER AUDIT BUREAU OF CIRCULATIONS

TOO MUCH CRUDE

What is the answer to too much crude?

The law of supply and demand will, of course, find the solution ultimately but in the meantime is there no way of avoiding the general loss while that law is leisurely working itself out?

In other words, if eventually, why not now?

Is there not some method that might be found by which the operations of the law of supply and demand might be expedited so we could get back to normal more quickly?

The oil industry has in recent years suffered heavily from periods of unregulated overproduction from flush fields.

Whatever may have been the benefits to a few from the flood of cheap oil the whole industry has been set back by the penalizing of the settled production which supplies the bulk of the country's crude and on which we are dependent for the future.

The refining industry has suffered a corresponding loss in having its products reduced to bankrupting prices and the marketing division has been demoralized by the invasion of outsiders attracted by a cheapened supply.

The public, hearing only of the gusher fields, renews agitation for cheaper gasoline and aspiring politicians are thereby encouraged to resume the legislative and executive baiting of the oil industry.

That is the position we are getting into today unless something is done about it.

When overproduction threatened the cotton-growing states the whole country was interested and approved the recommendation that cotton growing be restricted.

But when flush oil fields flood the market and force reduction of the price of crude throughout the country, inflicting irretrievable loss upon the vast bulk of settled production, nobody except the oil industry seems to care.

In fact, the mere suggestion that oil men restrict the production of crude is met with headshaking doubts whether the Government would not consider any such effort a violation of the antitrust laws. And so nothing or next to nothing is attempted.

Instead of getting together and discussing possible means of reducing overproduction, as the cotton producers did with Government encouragement, oil men accept the condition as inevitable and natural and leave its solution to the time-honored law of supply and demand.

When there is too much oil being produced, cut the price and make it unprofitable to drill. When the reduction of drilling finally cuts down production raise the price of oil and give the drillers an incentive to resume.

Simple and effective though this prescription is, it is none the less a hard dose. The question is whether the same restoration to health cannot be obtained by a less violent and upsetting remedy which will not leave the patient so near death's door.

The need for seeking some such remedy was acknowledged by the repeated efforts to find a basis of agreement in Seminole. But the measures taken were limited by doubt as to how far it was safe to go without bringing in governmental intervention.

At the same time there is the possibility that overproduction may furnish a further pretext for advocacy of governmental regulation of the whole business.

The situation is thus doubly critical.

But it should not be beyond the executive skill of oil company management or the legal ability of oil company counsel.

Adjustment of the practical details of operation as between one operator and another, as between one leaseholder and another, should not offer any insuperable difficulties if approached in the spirit of working out what is best for all.

In such a settlement, of course, no one can expect to gain all the advantage. There must be a spirit of give and take, strengthened by the realization that the greater interests of the whole industry are at stake.

The idea of shutting down the other fellow's well will not get anywhere.

If production is insisted upon, producers could better afford to build storage for flush production, which costs less to bring to the surface than settled production.

Agreement upon production, or erection of adequate storage that could keep flush output off the market and prevent it breaking prices below profitable settled production, offer methods that seem worthy of serious consideration.

As to the perils of government prosecution for conspiracy to restrict trade in making agreements to reduce overproduction, the attitude of the administration at Washington regarding conservation of oil suggests a solution.

Overproduction and conservation are contradictory. The Government would have to make a choice between one or the other.

The Department of Justice has suggested that business or industry in doubt as to the limits of legal co-operation may submit proposed plans for examination.

The suggestion might be offered to the legal advisers of the oil industry whether the situation might not be worked out so the industry would know definitely what it could do in such cases as the present.

One thing to remember is that these are not isolated cases. Overproduction is not here today and gone forever tomorrow. California was followed by Powell, Wortham, Smackover, Spindletop, Amarillo, Seminole.

Overproduction has plagued the oil industry from time to time without the industry ever having found a successful method of mitigating it.

Is it always to be that way or will the industry or the Government be driven to decisive action?

As Durable as the Oaks above them-

DRESSER COUPLINGS Dominate

S. R. Dresser Manufacturing Co.
Bradford, Penna.

View of a Hope Natural Gas Company line which employed more than 60,000 Dresser Couplings

New West Texas Pool and Extensions

Glasscock County Has Prospect. Fry Pool Spread South. Another Producing Area in Cooke County

By C. D. Lockwood
Staff Correspondent, North and West Texas

FORT WORTH, Tex., Mar. 7.—Crude price reductions by the Magnolia Petroleum Co. in North Texas and the Iatan district last Saturday morning, followed by the Humble Oil & Refining Co.'s cut in Crane, Crockett and Upton counties, naturally absorbed most of the interest of operators in these districts during the past week. The consensus of opinion is that West Texas operators cannot disregard this second cut as they did the first one on Washington's Birthday but that unnecessary drilling will have to be curtailed.

The Magnolia's cut amounted to approximately 25 cents on North Texas crude as a whole, the new prices being $1.20 for gravities below 28 degrees with an increase of 3 cents for each additional degree. That makes 36 to 36.9-degree crude worth just $1.47, a cut of 20 cents. This new schedule was met by all of the major companies Saturday.

Magnolia also placed the Iatan district of Mitchell and Howard Counties on the Mid-Continent price basis and the Kay County Gas Co. (Marland) reduced Howard County to $1.29, which corresponds to the new Magnolia price there since the average Howard County oil tests 30 to 31 degrees.

The Humble Oil & Refining Co.'s cut in Crane, Crockett and Upton Counties was made Monday and was met by Kay County Gas Co. The base price of 80 cents for crude below 26 degrees was not changed but the differential was reduced to 3 cents which makes the top price $1.13 for 36 and above, a reduction of 11 cents.

Daily Average Drops.

These cuts came on the heels of several large production gains in North and West Texas during the past several weeks although last week the daily average dropped 1,582 bbls., according to the estimates. West Texas was down from 94,330 bbls. to 90,680 bbls. in spite of the fact the Gulf Production Co. is now running 10,000 bbls. daily from its McElroy and State-Lasseter leases in Crane County. The Wichita Falls district gained about 340 bbls., having averaged 101,080 bbls., and the Ranger-Eastland-Brown and others district gained 1,730 bbls. to reach a total of 69,120 bbls. All three districts aggregated 260,880 bbls. this week.

A new pool in Glasscock County, about 5½ miles southwest of Howard County's shallow production, an important extension of the Fry Pool in Brown County, the apparent opening of another pool in Cooke County, a 750-bbl. well in the Fluhman area of Wilbarger County, a 40-bbl.-an-hour extension to the McElroy Pool in Crane County and a showing of gas in the Gulf Production Co.'s No. 1 Hendricks in Winkler County were the high lights of the week so far as field developments are concerned.

The new Glasscock County pool-opener is Marland Oil Co. and Texon Oil & Land Co.'s No. 1 Settles in Section 160, Block 29, W. & N. W. Survey. It is near the north line of the county, just about a mile south and some 5 miles west of the shallow production in southeastern Howard County. The well has 400 feet of oil in a 12-inch hole at 1,230-45 feet. It is in the middle of a block comprising more than 10 sections owned jointly by the two companies named above. The Texon Oil & Land Co. gained a place in the sun through its discovery of the Big Lake Field and seems to have hit the right spot again although this pool probably won't be as spectacular.

In Howard County, Gulf Production Co.'s No. 2 Chalk found a third gas sand at 1,750-54 feet, all three of the sands producing about 5,000,000 feet of gas. This will be bradenheaded and drilling resumed for deeper oil pay. This well is in the SW cor. of Section 125, Block 29.

Reeves & Apperman's No. 1 Clay, SW cor. SE SE Section 126, Block 29, flowed 80 bbls. in 9 hours following a shot of 20 quarts from 1,797-1,815 feet, according to latest reports.

Brown County Extension

In Brown County, Rosenfield and others' No. 1 Davis in the center of the east 40 acres of Pinkney Davis' 80 acres in the J. A. Townsend Survey, about 3 miles northeast of the Fry Pool, topped a sand at 1,277 feet carrying 25,000,000 feet of wet gas and a good show of live oil.

Half a mile south of the Fry Pool, Forsythe's No. 1 Shore in the SE cor. of the northeast 10 acres of the Charles Betts Survey, Section 625, is estimated good for 200 bbls. at 1,302-14 feet. This extends the Fry Pool southward and is important because it is located just east of the Wentz Oil Corp.'s dry hole and is in the direction of Sinclair Oil & Gas Co.'s production on the Shore lease. It probably means that much of the intervening territory will be productive.

In Eastland County, Texas Pacific Coal & Oil Co.'s No. 1 McCall, SW cor. SE Section 46, LaVaca County school land, was shot with 200 quarts in lime at 2,906-38 feet and flowed 90 bbls. by heads the first 18 hours afterward. It is cleaning out.

About 1 mile south of the Hooser Pool in Cooke County, Chapman & Lanier's No. 1 Montgomery in the NE cor. of the Thos. J. Hutchinson Survey, looks like the opening of a new pool. It topped sand at 1,308 feet and is estimated good for 50 bbls. at total depth of 1,318 feet in sand. The 6-inch is set at 1,310 feet, cutting off two feet of pay sand, and at latest report the well was showing gas through a hole full of mud.

One of the best producers in Wilbarger County is Fain-McGaha Oil Corp.'s No. 4 Waggoner-E located in the NE of Section 51, Block 4. It swabbed 800 bbls. at 1,955-90 feet, making it the best well in this pool. It also extends production one location east. Same company's No. 4 Fluhman swabbed 75 bbls. at 1,494 feet and had 500,000 feet of gas. No. 6 was estimated good for 30 bbls. on the pump at 1,491½ feet.

In Eastland County, Gulf Production Co.'s No. 2 Duffer flowed 152 bbls. at 3,478 feet and had 75,000 feet of gas.

Crane and Pecos Counties

In Crane County, Gulf Production Co.'s No. 7 J. T. McElroy, in the NE SW Section 199, Block F, nearly a mile north of production, flowed 40 bbls. an hour at 2,694-2,740 feet but was pinched in to 10 bbls. an hour awaiting pipe line connection. Same company's No. 5 Crier-McElroy, C NW NW NE, Section 204, on the west side of the pool topped the pay at 2,818 feet and flowed 62 bbls. at 2,885 feet. It was fishing at latest report Monday. Location has been made for No. 8 J. T. McElroy, 150 feet south and 330 feet west of NE cor. SE Section 203 and for No. 9 in the C SE SW Section 199. Rigs for both are moving in.

In Pecos County, Mid-Kansas Oil & Gas Co. and Transcontinental Oil Co.'s producers on the Yates Ranch were shut in February 28 because two 55,000-bbl. tanks were full of oil and the Illinois Pipe Line Co.'s 6-inch line from McCamey is not completed. The last three daily gauges on the big No. 2 well were 4,947 bbls., 5,070 bbls. and 5,399 bbls. The owners are building two additional 55's on the lease.

Brown County

Amerada Petroleum Corp.'s No. 17 J. H. Fry, found sand at 1,298-1,308 feet and made 10 bbls.; No. 19 made 400 bbls. at 1,304-19 feet after a 6-quart shot 1,304-19 feet, total depth 1,320 feet; No. 20 was shot with 5 quarts and made 400 bbls. at 1,319-48 feet; No. 21 found sand at 1,354-76 feet and made 300 bbls. after a 5-quart shot at 1,365-75 feet, total depth 1,378 feet. Amerada Petroleum Corp. and others' No. 1 Henslee had sand at 1,267-89 feet and had 600 feet oil in the hole. Barbara Oil Co.'s No. 3 Willis made 460 bbls. at 1,350-55 feet. Bowers and others' No. 1 Giddings lost bailer at 1,578 feet and was abandoned.

Canyon Oil & Gas Co.'s No. 5 Ellsberry made 25 bbls. at 1,404-23 feet after 15 and 20-quart shots. Carter's No. 1 Kennedy was temporarily abandoned at 2,410 feet. Claypool & Wells' No. 1 Corder was a failure at 1,600 feet. Curry and others' No. 2 Newton made 100 bbls. at 1,255-80 feet after a 25-quart shot; No. 3 was shot with 20 and 25 quarts at 1,257-84 feet and made 100 bbls. It was previously making 40 bbls. Gillespie's No. 8 Newton was shot with 15 quarts at 1,277-94 feet and made 5 bbls., total depth 1,299 feet. Humble Oil & Refining Co.'s No. 2 Fry made 42 bbls. in 7 hours initial from sand at 1,336-54 feet. Magnolia Petroleum Co.'s No. 1 Metts was shut down for orders at 1,345-49 feet. McCarter's No. 2 Leatherwood made 750,000 feet of gas at 1,123-33 feet, oil sand at 1,142-46 feet and 1,149-53 feet and made 4 bbls., total depth 1,173 feet.

Midwest Exploration Co.'s No. 6 Prater pumped 8 bbls. at 1,303-28 feet after a 30-quart shot. Prairie Oil & Gas Co.'s No. 5 Arledge found dry sand at 1,259-65 feet and was a failure at 1,323 feet; No. 6 was also a duster at 1,300 feet. Rex-Pyramid Oil Co.'s No. 5 J. H. Fry found sand at 1,279-97 feet and made 358 bbls.; No. 7 J. H. Fry made 468 bbls. at 1,279-96 feet; No. 10 also had sands at 1,290-91 and 1,305-09 feet and made 240 bbls., total depth 1,313 feet. Sinclair Oil & Gas Co.'s No. 5 J. H. Fry made 519 bbls. at 1,276-96 feet; No. 9 had sand at 1,292-1,314 feet and 576 bbls., total depth 1,325 feet.; No. 10 made 575 bbls. initial from sand at 1,291-1,324 feet; No. 11 found sand at 1,283-1,305 feet and made 240 bbls.; No.

Late News from the Fields

OKLAHOMA

In the Bowlegs (8-6) sector of the Greater Seminole Pool the Carter Oil Co.'s No. 1 Walker, NE cor. SW SE, Section 16-8-6 is flowing 300 bbls. hourly from sand found 4,049-55 feet. This is the most important development of the past week, and greatly increases the prospects of the Bowlegs region. The new well is located one quarter mile southeast of the Indian Territory Illuminating Oil Co.'s No. 1 Livingston, in the center of Section 15-8-9, and its production establishes that good results may be expected of the territory between the well in 13-8-6 and the Livingston well.

The Independent Oil & Gas Co.'s No. 1 P. Fixico, SW cor. SW, Section 23-9-6 is an unusual well. The Wilcox sand was touched at 4,269 feet and drilled to 4,289 feet and the well is flowing 2,470 bbls. daily. At this depth the well was expected to have encountered the water, but no water has been observed.

T. B. Slick's No. 4 Franks, SW cor. NE, Section 35-9-6 is flowing 170 bbls. hourly from the Wilcox sand 4,070-4,110 feet.

In Muskogee County, W. R. Summerville's No. 1 Monday, NW cor. SE NE, Section 17-15-17, is flowing 20 bbls hourly from sand touched at 1,440½ feet.

TRUITTSBURG GAS FIELD

NEW BETHLEHEM, Pa., Mar. 5.—Several new wells have been added on the Truittsburg gas field. Red Bank Corp.'s No. 4 Baynham is producing 1,000,000 feet of gas in the sixth sand. An Apollo Gas Co. well, northeast from the big wells on the Baynham and Brown farms, drilled in on the Henry Gruber farm, is producing 500,000 feet daily.

NORTH AND WEST TEXAS

FORT WORTH, Tex., Mar. 8.—Texon and Marland's No. 1 Settles, Section 160, Block 29, Glasscock County, has 800 feet of fluid in the hole after standing 39 hours, part of which is water from 949-60 feet. The oil sand is 1,230-45 feet, and the crude tests 34.2 degrees gravity. In Upton County, Roxana Petroleum Corp.'s No. 11 Bowen, Section 6, G. C. & S. F. Survey, is flowing 50 bbls. hourly from 2,035-45 feet. Texas Pacific's No. 4 Lane-A flowed 535 bbls. from 1,963-2,030 feet in Brown County. Forsythe's No. 1 Shore flowed 260 bbls. from 1,302-14 feet. Rosenfield's No. 1 Davis made one flow of 20 bbls. Monday from top of sand at 1,227 feet.

In Gray County, Riley and Hecks' No. 1 Hopkins, NW cor. Section 66 Block B-2 found first gas at same depth as in Pampa Pool and is now making 4,000,000 feet of gas at 2,830 feet. This is 5 miles due south of Pampa Pool on south side of Granite Ridge.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., Mar. 7.—The Walker-Van Dyun No. 1 Leigh, in Kerr County at Center Point, from 1,610 to 1,680 feet has been having continued showings of oil and gas in the Pennsylvan a. Some believe if shot it might make at least a small well.

Humble Oil & Refining Co.'s No. 3 Flato, that came in running wild at Kingsville, is now making dry gas into the gas pipe line supplying Kingsville. A gauge registering to 1,500 pounds rock pressure was not large enough to measure the pressure which is somewhere above that and with a volume of gas estimated at 80,000,000 feet. Eight-inch run into the well to wash out bridge and slip over 13 joints of drill stem lost in the hole is all still in the hole which is cased only to 1,485 feet, total depth being 2,250 feet.

GULF COAST

HOUSTON, Tex., Mar. 8.—Gulf Refining Co.'s No. 4 Lutcher Moore Lum-

(Continued on Page 212)

13 made 534 bbls. initial from sand at 1,307-18 feet.

The Texas Company's No. 1 Byler found sand at 1,271-82 feet and made 45 bbls. at 1,275-82 feet after a 5-quart shot; No. 13 Lowe is cleaning out and flowing 23 bbls. at 1,272-86 feet; No. 15 found sand at 1,274-95 feet and was cleaning out and flowing 200 bbls.; No. 21 was cleaning out and flowing 290 bbls. in 11 hours at 1,257-68 feet; No. 23 flowed 349 bbls. in 13 hours initial from sands at 1,242-47 and 1,259-64 feet. Tidal Oil Co.'s No. 7 Hodnett found 3,000,000 feet of dry gas at 990-1,005 feet. It had sand at 1,202-07 and 1,210-25 feet making 100 bbls.

Callahan County

Murchison & Fain's No. 1 Rumph was a failure at 2,165 feet. Prairie Oil & Gas Co.'s No. 2 Baum made 8 bbls. initial from sand at 1,650-60 feet after a 12-quart shot, total depth 1,681 feet.

Coleman County

Evans and others' No. 1 Davis had sand at 1,400-02 feet and was dry at 1,441 feet.

Eastland County

Gholson and others' No. 2 Duffer made 420 bbls. initial from sand at 3,460-95 feet and was plugged back from 3,495 feet to 3,489 feet and is now making 200 bbls. at 3,460-84 feet after a 40-quart shot; No. 3 made 38 bbls. per hour at 3,470-88 feet. Lewis and others' No. 1 Johnson made 3,500,000 feet of dry gas at 1,759-63 feet. Lewis and Moore's No. 1 Lyerla was dry and abandoned at 1,810 feet. Panhandle Refining Co.'s No. 26 Hightower found sand at 1,204-16 feet and made 20 bbls. oil and 1 bbl. of water.

Teatsworth and others' No. 1 Citizen made 35 bbls. initial from sand at 1,398-1,412 feet after a 40-quart shot and was plugged back from 1,435 to 1,412 feet. Bryant and others' No. 1 Scott was a failure at 3,215 feet. Independent Oil & Gas Co.'s No. 2 Morgan was shot with 200 quarts at 2,935-3,015 feet and made 200 bbls. of oil and 2,000,000 feet of gas. It is now pumping 25 bbls. Livingston & Willman's No. 1 Harrell made 5,000,000 feet of gas and increased to 10,000,000 initial from sand at 3,670-85 feet. Magnolia Petroleum Co.'s No. 1 Thomas was shot with 200 quarts at 2,915-3,017 feet and pumped 8 bbls. of oil with 2,000,000 feet of gas. Texas Pacific Coal & Oil Co.'s No. 1 McCall found top of black lime at 2,906 feet with a show of 2 bbls. at 2,907 feet and is drilling at 2,965 feet.

Shackelford County

Gwinnup and others' No. 1 Poindexter, Section 59, was a failure at 1,522 feet. Overlees' No. 6 Matthews had sand at 898-905 feet and made 30 bbls. Ramsey & Maxey Oil Co.'s No. 1 Herron was dry at 1,180 feet. Republic Production Co.'s No. 1 Myer made 47 bbls. at 1,005-20 feet. Roeser & Pendleton & Marland Oil Co.'s No. 14 Moberly made 150 bbls. initial from sand at 1,256-72 feet No. 3 Moberly was plugged back 2 feet and made 20 bbls. initial from sand at 1,256-71 feet.

Stephens County

Mid-Kansas Oil & Gas Co.'s No. 6 Hill Acct. 1 made 70 bbls. initial from sand at 3,316-35 feet after a 40-quart shot, total depth 3,338 feet. J. R. Eidson's No. 1 Smith found top of gas sand at 1,895 feet and made 3,000,000 feet of gas. Texas Pacific Coal & Oil Co.'s No. 26 Hohertz made 15 bbls. at 1,595-1,610 feet after a 30-quart shot and was plugged back from 1,740 to 1,625 feet.

Archer County

Arco Oil Co.'s No. 1 Chilson was dry and abandoned at 1,841 feet. Bridwell & Heydrick's No. 14 Abercrombie & Taylor-A was also a duster at 1,450 feet. L. T. Burns' No. 4 Turbeville-D made 150 bbls. at 1,436-61 feet; No. 5 made 215 bbls. at 1,433-63 feet; No. 6 was good for 70 bbls. at 1,318-27 feet; No. 7 made 230 bbls. at 1,433-61 feet.

Harris and others' No. 1 Farmer pumped 138 bbls. at 1,460-62 feet. Magnolia Petroleum Co.'s No. 11 Hudson pumped 10 bbls. the first 12 hours from sand at 1,159-71 feet. Marland Oil Co.'s No. 18 Turbeville swabbed 260 bbls. at 1,481-1,510 feet; Marland Oil Co. & Perkins' No. 1 Perkins-A was a failure at 1,768 feet. Mid-Kansas Oil & Gas Co.'s No. 7 Lowe made 20 bbls. at 1,297-1,300 feet.

Petroleum Producers Co.'s No. 3 Turbeville-C, swabbed 130 bbls. at 1,447-50 feet. Plains Production Co.'s No. 1 Lyles was good for 140 bbls. at 1,544-52 feet. Pois & Johnson's No. 2 Wilson made 105 bbls. at 1,516-21 feet. Simms Oil Co. & Consolidated Oil Co.'s No. 1 Turbeville was plugged at 1,538 feet. Staley, Wynne & Kruger's No. 1 Coody was also a dry hole at 1,557 feet. The Texas Company's No. 1 Love made 50 bbls. of oil and 10 bbls. of salt water at 1,373-80 feet. Tidal Oil Co.'s No. 3 Turbeville-A swabbed 210 bbls. from sand at 1,464-67 feet.

Cooke County

American Refining Co.'s No. 7 Dennis had sand at 1,140-48 feet and broken sand and shale to 1,229 feet, making 35 bbls. Camp & Heydrick & Oil Operators Trust Co.'s No. 2 Kleiss was completed for 90 bbls. from sand at 1,298-1,302 and 1,315-24 feet. It was drilled one-half foot deeper in lime. The location for Fain McGaha Oil Corp.'s No. 1 Vestal was abandoned.

Kewanee Oil & Gas Co.'s (formerly Hooser Oil Co.'s) No. 17 Dennis pumped 40 bbls. at 1,258-95 feet. Scientific Oil Corp.'s No. 1 Ludeman was a duster at 2,002 feet. Stroube & Stroube's No. 1 Koelser made 44 bbls. at 1,272-1,306 feet.

Montague County

Arco Oil Co.'s No. 3 Salmon made 42 bbls. at 904-21 feet. Continental Oil Co.'s No. 23 Howard was good for 17 bbls. at 1,143-53 feet; No. 18 Howard-A made 34 bbls. from sands 1,122 to 1,155 feet; No. 2 Howard-C made 30 bbls. from 1,369 to 1,407 feet; No. 17 Maddox-A pumped 38 bbls. from 893 to 914 feet; No. 18 Maddox-A pumped 57 bbls. from 925 to 939 feet; No. 12 Rowland-B made 142 bbls. from 1,045 to 1,165 feet.

Throckmorton County

M. R. Brann's No. 1 L. & C. Reynolds was dry and abandoned at 2,012 feet. Falls Production Co.'s No. 1 Graham swabbed and flowed 125 bbls. from sand at 1,806-10 feet, total depth 1,813 feet. Reiter-Foster Oil Corp.'s No. 2 Graham-A was plugged as a duster at 1,874 feet.

Wichita County

British American Oil & Refining Co.'s No. 1 Kemp & Kempner had broken sand, 1,816-18 feet and oil sand 1,818-20 feet, pumping 30 bbls. of oil and 25 bbls. of water. Cooper & McLaughlin's No. 3 Love pumped 186 bbls. from sand at 1,-809-15 feet. Fain-McGaha Oil Corp.'s No. 2 Ferguson was dry and plugged at 1,820 feet. W. Hammon and others' No. 11 Waggoner-B was a failure at 1,873 feet.

Humble Oil & Refining Co.'s No. 1 Munger-A was also dry at 1,853 feet. So was John O'Neill's No. 3 Yarborough at 1,658 feet. Panhandle Refining Co.'s No. 2 Griffin (60 acres) had sand at 1,826-32 feet and broken sand 1,835-40 feet, total depth 1,845 feet, and pumped 20 bbls. Petroleum Producers Co.'s No. 5 Love-B (shallow) pumped 25 bbls. from sand at 486-96 feet. Ryan Petroleum Co.'s No. 89 Nance pumped 35 bbls. at 1,276-1,316 feet; No. 90 Nance pumped 40 bbls. at 1,278-1,319 feet.

C. P. Sheldon's No. 1 Honaker pumped 60 bbls. at 1,648-66 feet. Sheldon and others' No. 1 Frankl-B pumped 30 bbls. from sand at 1,651-72 feet. The Texas Company's No. 87 Stringer pumped 167 bbls. from sand at 1,165-80 feet. C. W. Wallace's No. 1 Burnett was dry and plugged at 3,258 feet. A. T. Wolf, trustee, also abandoned No. 5 Daume at 1,834 feet.

Wilbarger County

J. Barnes' No. 1 Ancell pumped 45 bbls. of oil and 15 bbls. of water from broken sand at 1,722-26 feet and solid sand 1,726-28 feet. Humble Oil & Refining Co.'s No. 1 Chauncey & Gambill was a failure at 3,875 feet. Kelly and others' No. 1 Waggoner, Section 26, was likewise a dry hole at 2,585 feet. Magnolia Petroleum Co.'s No. 24 Piper made 45 bbls. at 1,871-75 feet.

Phillips Petroleum Co.'s No. 6 Waggoner-I was plugged back from 2,650 to 2,468 feet and pumped 10 bbls. from sand at 2,412-16 feet. No. 4 Waggoner-L flowed 230 bbls. at 2,297-2-302 feet, total depth 2,376 feet; No. 13 Waggoner-NN pumped 35 bbls. from lime at 2,533-35 feet. Phillips Petroleum Co. and others' No. 1 Waggoner was dry and abandoned at 2,895 feet.

Young County

King Royalty Co. & Tidal Oil Co.'s No. 26 Benson was dry and plugged at 941 feet; No. 27 Benson swabbed 40 bbls. from sand at 912-27 feet. Magnolia Petroleum Co.'s No. 1 Bloodworth made 8 bbls. at 547-57 feet. McChesney and others' No. 4 Beardon was a failure at 1,095 feet. Roberts Oil Co.'s No. 1 Graham swabbed 144 bbls. from sand at 833-39 feet.

WEST TEXAS COMPLETIONS

Crane County

W. E. Duffey and others' No. 1 W. H. Cowden Co. in Section 8 was dry and abandoned at 3,250 feet. The Texas Company's No. 13 King swabbed 62 bbls. following a shot of 40 quarts at 2,319-29 feet, total depth 2,400 feet. Tidal Oil Co.'s No. 1 University-E was swabbing and flowing 84 bbls. from pay at 2,930-3,000 feet.

Crockett County

Republic Production Co.'s No. 2 Powell pumped 160 bbls. at 2,620-71 feet.

Garza County

Emerald Oil Co.'s No. 1 Connell-A was abandoned at 3,215 feet and the location for same concern's No. 2 Connell was also abandoned.

Glasscock County

Marland Oil Co.'s No. 1 Nellie Calder was plugged at 3,500 feet.

Howard County

Humble Oil & Refining Co.'s No. 2 E. W. Douthitt was shot with 40 quarts in pay at 1,650-70 feet and made 30 bbls. Lockhart & Co.'s No. 1 Scott, which was shot some weeks ago with 210 quarts from 2,740-2,810 feet after plugging back from 3,220 to 2,825 feet, now pumps about 20 bbls. of oil and 10 bbls. of water. The water seems to be exhausting. Same company's No. 2 Otis Chalk swabbing 40 bbls. at 1,653-84 feet.

Magnolia Petroleum Co.'s No. 2 Hyman Chalk was good for 58 bbls. the first 24 hours after a 15-quart shot at 1,575-82 feet, total depth 1,590 feet; No. 1 Sarah Hyman was completed for 13 bbls. following a 60-quart shot at 1,602-25 feet.

Marland Oil Co.'s No. 11 Otis Chalk swabbed 45 bbls. at 1,611-25 feet; No. 3 Otis Chalk-A swabbed 62 bbls. while cleaning out at 1,568 feet; No. 1 Otis Chalk-C gauged 880,000 feet of gas at 1,580 feet and was shut down; No. 1 H. R. Clay-A swabbed 125 bbls. after a 50-quart shot at 1,772-97 feet, total depth 1,800 feet and was completed; No. 2 H. R. Clay-A swabbed 75 bbls. the first 12 hours at 1,779-83 feet.

Jeff Davis County

Humble Oil & Refining Co.'s No. 1 McCutcheon was plugging to abandon at 3,440 feet.

Mitchell County

Magnolia Petroleum Co.'s No. 7 C. M. Adams swabbed 60 bbls. after a 320-quart shot at 2,912-3,038 feet, total depth 3,040 feet. Riley & Donnelly abandoned the location for No. 1 Crump.

Reagan County

Big Lake Oil Co.'s No. 73 University was completed for 8,000,000 feet of gas at 2,480 feet; No. 82 University flowed 1,450 bbls. from pay lime at 2,888-99 feet; No. 9 was completed as a gasser good for 10,000,000 feet of gas at 2,485 feet; No. 105 made 75 bbls. at 2,998-3,021 feet.

Reeves County

Grisham & Hunter's No. 1 State was dry and abandoned at 3,112 feet.

Runnels County

Red Bank Oil Co.'s No. 1 Fowler had a hole full of salt water at 3,785-87 feet and was plugged and abandoned.

Upton County

Dixie Oil Co.'s No. 10 Burleson was plugging to abandon at 3,305 feet; No. 15 Burleson in the John Nidever Survey No. 2 was completed for 2,400 bbls. initially from pay at 2,013-16 feet. Nos. 15, 16 and 17 were flowing 2,626 bbls. all together on March 3. Same company's No. 19 Burleson, same survey, flowed 893 bbls. February 28 at 1,948-2,020 feet and was still flowing 758 bbls. March 1, 726 bbls. on the second and 720 bbls. on the third.

Independent Oil & Gas Co.'s No. 13 Wooley flowed 2,696 bbls. initial at 2,-155 feet, 5 per cent water and 10 per cent b. s. The latest available gauge was 1,631 bbls. with the same b.s. and water content. No. 14 Wooley flowed 50 bbls. at 2,135-93 feet.

Marland Oil Co.'s No. 10 Estep flowed 200 bbls. of oil and 225 bbls. of salt water from pay at 2,368-2,400 feet; No. 12 Estep flowed 555 bbls. at 2,385 feet, with 3 per cent water and 32 per cent b. s. This well had its first showing at 2,236 feet and increase of oil at 2,277-80 feet. Marland's No. 3 Powell flowed 63 bbls., 2 per cent water and b. s. at 2,600-02 feet; No. 1 Shirley-A was shot with 60 quarts at 2,166-79 feet and pumped 220 bbls. afterward. Total depth is 2,190 feet.

Rio Grande Oil Co.'s No. 1 Chaney was abandoned at 2,406 feet. Roxana Petroleum Corp.'s No. 9 Bowen showed a little water at 2,156 feet and was plugged back from 2,164 feet to 2,152 feet where it swabbed 160 bbls. with no water. Top of pay is 2,065 feet. Simms Oil Co.'s No. 3 Shirley swabbed 75 bbls. after a 40-quart shot at 2,155-67 feet and no water was in evidence. Top of pay is 2,140 feet, total depth 2,168 feet.

The Texas Company's No. 17 King swabbed 25 bbls. of oil and 75 bbls. of water at 2,075-2,130 feet. Texas Pacific Coal & Oil Co.'s No. 4 Lane-A flowed 320 bbls., no water, at 1,963-2,009 feet. Wentz Oil Corp.'s No. 4 Sherk swabbed 30 bbls. but had a trace of sulphur water. The pay was at 2,250-68 feet.

WEST TEXAS WILDCATS

Week Ending March 5, 1927

ANDREWS COUNTY

Company, Farm and Location— Remarks—

Calvin & Belt's No. 1 Ratliff & Bedford, C NE Sec. 16, Blk. A-54 ..... Location.

J. S. Cosden's No. 1 Ratliff & Bedford, C SE Sec. 8, Blk. 73, Public School Land ..... Location.

Deep Rock Oil Co.'s No. 1 W. J. Harris, C SE Sec. 12, Blk. A-46, Public School Land ..... Location.

C. B. McKennon's (was Neff et al's) No. 1 J. S. Means, C SE Sec. 12, Blk. A-35, Public School Land..... To spud by April 9.

A. G. Carter & Zweifel's No. 1 Cowden, C SE Sec. 18, Blk A-52, Public School Land Sur..... Total depth 650 ft.; driving 15-in.

Maer & Staniforth's No. 1 W. B. Taylor, C SE Sec. 16, Blk. A-42, Public School Land Sur..... Running 10-in. 800 ft.

CASTRO COUNTY

Colorado O. & R. Co.'s No. 1 M. Siemons, SW cor. Sec. 78, Blk. M-7, B. S. & F. Sur. ..... Rig.

Gulf Prod. Co.'s No. 1 Clements, SW cor. Sec. 27, Blk. M-10-A, Sealy & Morris Sur..... Total depth 1,425 ft.; underreaming 8-in. to 1,370 ft.

(Continued on Page 208)

SELECTS REPRESENTATIVE

Ward Raymond, president and general manager of the Pennsylvania Pump & Compressor Co., Easton, Pa., completed arrangements with the Gas Engineering & Construction Co. of Tulsa, with branches throughout the Mid-Continent, to handle his company's complete line of compressors and pumps. Mr. Raymond returned to Easton from Tulsa early this week.

"AIR" JUST SLIPPED IN

In the article entitled "Developments in Petroleum Refining," by Dr. C. K. Francis, appearing on page 99 of this issue, the word "air" in last sentence of second paragraph should be omitted.

Crude Cut Slows Panhandle Operators

Prairie and Phillips Companies' Well Making 160 Bbls. an Hour. Important Test in Moore County

By C. D. Lockwood
Staff Correspondent, Texas Panhandle Fields

A 20-cent cut in the posted price of Carson and Hutchinson County crude and readjustment of the Gray-Wheeler schedule which amounted to practically the same reduction in those counties was posted Monday by the Humble Oil & Refining Co. and met by the Gulf Production Co. and Kay County Gas Co. This price reduction came as a surprise to many Panhandle operators and was received with disappointment due to the fact that Panhandle prices have been considered too low in comparison with other Mid-Continent areas. It is a known fact, however, that much of the Panhandle oil, along with other "sour" crude, has been going into steel storage and this undoubtedly was a major factor in the reduction of prices. There is a determined effort to curtail operations in the Panhandle and West Texas where transportation facilities are limited and the quality of the oil not as desirable as that in Seminole and other "sweet" areas. Last week the Phillips Petroleum Co. abandoned 17 locations and rigs in the Panhandle because of the market situation and doubtless the coming week will find a number of other companies following suit. Some have had their drilling programs cut down to bare necessities for several weeks, notably the Gulf Production Co., which has a vast number of undrilled locations but is drilling only 7 wells and has but 4 additional rigs up in Hutchinson County.

Decline in Production

The cut in price came on the heels of a 3,423-bbl. decline in daily average production throughout the Panhandle. This week's daily average was 127,632 bbls. from 975 wells, an output per well of just 130.9 bbls. Hutchinson County, with 771 producers, contributed 110,402 bbls., a per well average of 143.1 bbls. Hutchinson County's decrease was 3,687 bbls. during the week. Carson County averaged 7,036 bbls., practically the same as the previous week, and Wheeler County declined a little to 1,461 bbls. but Gray County increased 348 bbls. to 8,050 bbls.

The McMan Oil & Gas Co. showed the greatest decrease in production due to water trouble on its Johnson-Gray lease in Section 21, Block Y. The decline was from 4,243 bbls. to 2,155 bbls. This has been a wonderful lease and the surrounding area has yielded some of the best production in Hutchinson County. Water scares have been reported in the Panhandle from time to time and yet the operators seem to go ahead producing the oil so this situation will probably be handled as in previous instances. However, it has some of the offset companies alarmed.

The Humble, Gulf-Magnolia and Prairie pipe lines from the Panhandle are expected to be ready for operation about April 15.

There were 606 operations in the Panhandle this week, as follows: 36 new locations, 51 locations carried over from previous weeks, 29 rigs building, 29 rigs standing, 25 wells rigging up, 363 wells drilling, 54 wells shut down, and 19 completions. Of this number Hutchinson County had the following: 50 locations, 15 rigs building, 24 rigs standing, 27 rigging up, 179 wells drilling, 9 shut down and 14 completions. These figures do not include the 17 locations abandoned this week by Phillips Petroleum Co.

Biggest Well in Weeks

The biggest well of many weeks was contributed by the Prairie Oil & Gas Co. and Phillips Petroleum Co. in their No. 46 Johnson-A, in Section 21, Block Y. It was shot with 65 quarts from 2,900-45 feet and flowed 3,690 bbls. the first 24 hours afterward, but 800 bbls. was water. At latest report this well was flowing 160 bbls. an hour. Before the shot it flowed 1,500 bbls. from 2,895-2,943 feet.

Prairie's No. 30 Johnson-A in Section 21, which was completed in December for 105 bbls. at 2,832-2,902 feet, and which had declined to 30 bbls., was converted into a producer flowing 877 bbls. by shooting with 140 quarts this week from 2,847-2,902 feet.

Gulf Production Co.'s No. 11 Johnson in the SE cor of Section 70, Block 46, which was one of the biggest wells in Hutchinson County last October, having flowed 215 bbls. an hour at that time, was deepened this week from 2,923 to 2,937 feet in soft sandy lime without increasing the production to any extent. It flowed 340 bbls. afterward.

Phillips Petroleum Co. shot No. 1 Bivins in Section 84, Block 46, with 140 quarts from 2,931-81 feet, increasing it from about 50 bbls. to 350 bbls., flowing. The pay depth in this well was at 2,960-73 feet.

Prairie Oil & Gas Co. also shot No. 1 Cal Merchant in Section 37, Block 47, north of the river. This is the well-known "Big Creek" test, which flowed better than 1,000 bbls. last October and has gradually declined to about 500 bbls. The shot of 10 quarts was placed from 2,701 to 2,736 feet and the initial gauge afterward was 700 bbls. Marland Oil Co.'s No. 2 Merchant, diagonal offset, flowed 400 bbls. after a 60-quart shot at 2,825-50 feet.

Moore County Test

Humble Oil & Refining Co.'s No. 1 Kilgore in Section 28, Block 44, Moore County, struck 3,000,000 feet of wet gas at 3,535 feet. The 6-inch pipe is set at 3,515 feet. This is one of the most interesting tests in the Panhandle, having found the lime some weeks ago at about the right depth to make a commercial producer if porosity and other conditions are favorable. One of the reasons why it is so interesting is the part of Moore County in which it is located, being about 10 miles due south of Dumas, and only about 6 miles north of the Potter County line.

Another wildcat located in an unconventional spot which looks interesting is the Gulf Production Co.'s No. 1 Saunders on the south line of Section 40, Block 3, Gray County, northeast of the Pampa Pool. The upper formations are running high and the lime is expected to be found approximately 825 feet above sea level. Monday it was cementing 8-inch at 2,385 feet.

Nabob Oil Co.'s No. 1 Morse in Section 68, Block 25, eastern Gray County, was the source of numerous rumors last week but subsequent pipe line reports failed to reveal anything extraordinary. After a shutdown of several weeks this well was opened up February 27 and swabbed 139 bbls. the first 24 hours and has since averaged 47 bbls. daily. It is nearly a mile south of the old W. H. Holmes' No. 2 well which made some oil a couple of years ago and it may presage another good producing district somewhere in that vicinity.

On the north end of the Roxana Pool of eastern Carson County, F. Knappenberger's No. 1 Bryan, C SW NW NW Section 107, Block 4, picked up 700 feet of salt water at 3,248-65 feet and has been abandoned. It is a little more than half a mile north of Nunn & McAuley's No. 1 which was a sensational producer some weeks ago.

Donley County Showing

Donley County reported a showing this week but it is not much to get excited about. The A. T. Drilling Co.'s test in Section 39, Block B-3, picked up a rainbow at 2,360 feet but since this well found the top of the lime only 250 feet above sea level it is doubtful if a commercial producer can be expected.

Gulf Production Co.'s No. 6 Dial in Section 1, Block 1, north of the river in Hutchinson County, averaged 1,025 bbls. last week and 1,003 bbls. the previous week, on air lift. This well came in last summer for 1,600 bbls. It was put on gas lift several weeks ago but at that time was still making nearly 1,000 bbls. daily.

Several deep tests are scheduled for Hutchinson and Gray Counties and will be watched with keen interest when they get to important depths. Dixon Creek Oil Co. plans to deepen one of its wells in Section 14, Block Y and the Marland Oil Co. is going to make a deep test on its Weatherly lease in Section 19. North of the river, Prairie Oil & Gas Co., Shamrock Petroleum Co. and Hagy's No. 1 Yake is to be carried down as far as possible. This is in Section 35, Block 46. In Gray County, Wilcox-Pampa Oil Co. plans a deep one in No. 8-A Combs & Worley, in Section 62, Block 3. There are several deep wells now drilling in the Panhandle but they are not in the area where production is found above sea level . The deepest of these is Big Bend Oil Co.,'s No. 1 Ledrick in Section 7, Block 5-A, Roberts County, which at latest report was drilling below 4,775 feet in black shale.

Skelly Oil Co. is reported to be starting 5 new gasoline plants in eastern Carson County. One will be a 10,000-gallon oil absorption type and the other 4 will be charcoal plants to handle gas in flush areas. Phillips Petroleum Co. is also planning another plant to be located in the Big Creek-Merchant area of Hutchinson County but has not made any definite announcement as to size.

Carson County

Magnolia Petroleum Co.'s No. 1 Fee No. 244, NW cor. NE, Section 91, Block 4, was completed for 550 bbls. from granite wash and lime at 3,163-84 feet. Marland Oil Co.'s No. 1 Burnett-I, NE cor. Section 102, Block 4, flowed 100 bbls. at 3,201-04 feet and was rigging up cable tools to deepen.

Gray County

Wilcox-Pampa Oil Co.'s No. 19 Worley & Reynolds, Section 62, Block 3, flowed 350 bbls. at 2,945-70 feet. This well had 1,000,000 feet of gas at 2,650-2,710 feet.

Hutchinson County

North of the Canadian River, Phillips Petroleum Co. abandoned the location for No. 3 W. S. Christian. Same company's No. 13 Perkins-Martin, Section 1, Block X02, was shot with 150 quarts in pay from 2,920-80 feet and increased from 100 to 320 bbls. The rig for No. 14 was abandoned temporarily.

South of the river, American Refining Co.'s No. 4 J. F. Weatherly, Section 19, Block Y, made 85 bbls. following a shot of 120 quarts at 2,979-3,014 feet. Collier & Taylor's No. 1 Smith, Section 15, Block Y, also made 85 bbls, as a result of a

(Continued on Page 212)

WILDCAT OPERATIONS IN PANHANDLE

Week Ending March 5, 1927

ARMSTRONG COUNTY

Company, Well, Farm Name, Section and Block—	Remarks—
United Oil & Trust Co.'s No. 1 J. P. Reck, Sec. 162, Blk. 4, H. & G. N. Sur.	Spudded and shut down.

BRISCOE COUNTY

Smith & Baker's No. 1 J. W. Owens, Sec. 11, Blk. GC2.	Location.

CARSON COUNTY

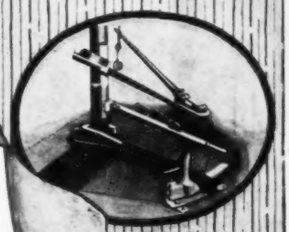
Amatex Oil Co.'s No. 1 E. S. Polling, Sec. 12, Blk. 3-Y	Shut down 1,980 ft.
Champlin Ref. Co.'s No. 3 E. F. Bryan, Sec. 92, Blk. 4	Set 12-in. 600 ft.; drilling 2,575 ft.
Champlin Ref. Co.'s No. 4 Bryan, Sec. 92, Blk. 4	Set 8-in. 2,368 ft.; drilling 3,035 ft.
Champlin Ref. Co.'s No. 6 Bryan, Sec. 92, Blk. 4	Drilling 2,475 ft.
Delmar Oil Co.'s No. 1 T. D. Lewis, SW cor. Sec. 115, Blk. 4	First gas 2,640 ft.; 7,000,000 ft. gas 2,800 ft.; run 8-in. 2,980 ft.
Empire G. & F. Co.'s No. 1 Lane, NW cor. SW, Sec. 72, Blk. 4	Drilling 2,600 ft.; 25,000,000 ft. gas.
Empire G. & F. Co.'s No. 2 M. P. Co. fee-A, NE cor. SW Sec. 91, Blk 4	Drilling 850 ft.
Empire G. & F. Co.'s No. 3 M. P. Co. fee-A, SE cor. SW Sec. 91, Blk. 4	Spudding.
Gulf Prod. Co.'s No. 1 Noel, SE cor. SW Sec. 198, Blk. 3	Drilling 2,300 ft.
J. K. Hughes Developing Co.'s No. 1 F. E. Percival, NE cor. E ½ NW Sec. 199, Blk. 3	Drilling 2,200 ft.
J. K. Hughes Developing Co.'s No. 2 F. E. Percival, NW cor. E ½ NW Sec. 199, Blk. 3	Drilling 400 ft.
Marland Oil Co.'s No. 1 Burnett-I, Sec. 102, Blk. 4	Flowed 100 bbls. 3,201-04 ft.
Marland Oil Co.'s No. 1 Burnett-J, C NE NE, Sec. 121, Blk 5	Drilling 900 ft.
Marland Oil Co.'s No. 1 J. W. McConnell, SE cor. W ½ NE Sec. 67, Blk. 4	Total depth 345 ft.; drilling up casing shoe.
Marland Oil Co.'s No. 2 J. W. McConnell	Rig.
Marland Oil Co.'s No. 1 C. R. Garner, NE cor. Sec. 94, Blk. 4	Drilling 2,300 ft.
Marland Oil Co.'s No. 2 C. R. Garner	Building rig.
Marston Oil Co.'s No. 1 E. F. Bryan, Sec. 92, Blk. 4	First gas 2,670 ft.; drilling 2,795 ft.; 5,000,000 ft. gas.
McMan O. & G. Co.'s No. 1 J. L. Noel, SW cor. SE SE Sec. 198, Blk. 3	Drilling 2,550 ft.
McMan O. & G. Co.'s No. 1 F. E. Percival, NE cor. W ½ NE Sec. 199, Blk. 3	Standardizing 2,631 ft.
McMan O. & G. Co.'s No. 2 F. E. Percival, NW cor. W ½ NE Sec. 199, Blk. 3	Drilling 2,375 ft.
Mound Valley Oil Corp.'s No. 1 Witter, Sec. 1, Blk. 7	Total depth 3,192 ft.; shut down.
Navajo Oil Co.'s No. 1 E. S. Polling, Sec. 32, Blk. 3-Y	Shut down 500 ft.
Nunn & McAuley's No. 2 Bryan, SE cor. NW SW, Sec. 107, Blk. 4	100 bbls. 3,205-12 ft.; to deepen.
Osborne et al's No. 1 F. E. Percival, NW cor. E ½ NE sec. 199, Blk. 3	Drilling 610 ft.
J. C. Parks' No. 1 J. W. McConnell, Sec. 67, Blk. 4	Rigging up rotary.
J. C. Parks' No. 2 J. L. Noel, SW cor. W ½ SE Sec. 198, Blk. 3	Drilling 2,225 ft.
Prairie O. & G. Co.'s No. 1 Bryan, Sec. 107, Blk. 4	First gas 2,805 ft.; 15,000,000 ft. gas 2,980 ft.
Prairie O. & G. Co.'s No. 2 Bryan, Sec. 107, Blk. 4	Spudded and shut down.
Prairie O. & G. Co.'s No. 2 J. W. McConnell-A, NE cor. SE, Sec. 67, Blk. 4	Drilling 650 ft.
Prairie O. & G. Co.'s No. 3 J. W. McConnell-A, NE cor. NW SE, Sec. 67, Blk. 4	Drilling 410 ft.
Prairie O. & G. Co.'s No. 4 J. W. McConnell-A, SE cor. Sec. 67, Blk. 4	Spudding.
Prairie O. & G. Co.'s No. 1 J. W. McConnell-B, SW cor. E ½ NE, Sec. 67, Blk. 4	Drilling 375 ft.
Prairie O. & G. Co.'s No. 2 J. W. McConnell-B, SE cor. NE Sec. 67, Blk. 4	Drilling 700 ft.
Prairie O. & G. Co.'s No. 1 F. E. Percival, NW cor. W ½ NW Sec. 199, Blk. 3	Rig.

(Continued on Page 160)

[DUNN TOOLAGRAM]

OIL WELL DUNN TOOLS

Advancement



Rarely a month goes by that we do not announce some new and genuine improvement over previous practice or devices for drilling and pumping wells which greatly increases safety, speed and efficiency of operations.

There's a thought worthy of your attention, men. We are intensively devoting our efforts to the advancement of oil field practice - - - and we're setting a dizzy pace for some of our followers.

DUNN
MANUFACTURING COMPANY
OXNARD, CALIFORNIA

Mid-Continent Branch Warehouse
215 East Archer St. Tulsa, Oklahoma

Export Sales Office
150 Broadway, New York City

Earlsboro Duster Regarded Important

Makes Area South and Southeast of Production Appear Less Desirable. Good Wildcat Northeast of Wewoka

By J. L. Dwyer
Staff Correspondent, Oklahoma Fields

The Earlsboro sector of Seminole, and the performance of a few wildcat wells in various parts of the State furnished the most interesting features of the Oklahoma fields last week.

At Earlsboro, one big well, and a dry hole in the Wilcox sand balanced the completions of the week, and the dry hole furnished something of a disappointment. McGraw-Baughman-Bearly Co. drilled the duster, and it is No. 1 Anderson, NW cor. SW, Section 15-9-5. The water was found in the first 10 feet of the Wilcox which was penetrated 4,333-43 feet. This is a keen disappointment dealt to the prospects of the region southeast and south of the production, and in all probability indicates that Earlsboro may not assume the proportions expected of it. A varying opinion has been expressed about the possibilities of Earlsboro and also of Township 8-6. Many are inclined to favor the thought that neither of these sections will cover anything like the area of the Seminole Pool proper, while some have contended that they will exceed Seminole's area. The failure is located half a mile south and one location east of the discovery well, and a quarter mile south of the producing limits of the pool.

The new well at Earlsboro is the Gypsy-Amerada's No. 3 State land, SE cor. NW NE, Section 16-9-5, one location south of the discovery well, and a direct west offset to the Amerada's No. 1 Anderson. The new well had the Wilcox 4,232-38 feet, and started flowing 377 bbls. an hour. On the first 24 hours of production it made 9,110 bbls.

Seminole Curtailment

In Seminole proper, there were no startling completions of the week, and the curtailment campaign started to prevent a waste of oil resulted in a decrease in daily production which ranged from 287,000 bbls. to 303,000 bbls. last week. Many of the companies have voluntarily removed the air-gas lift methods which have maintained the huge output of the field. There is a concerted movement to attempt to handle a large amount of Seminole oil by tank car at this time, and additional pipe line facilities are being rushed to completion. The Pure Oil Co. has made good headway with a new line which will run from the pool to its nearest line at Beggs, Okla., a distance of 45 miles. The Empire Gas & Fuel Co. has started work on a line from Cromwell to Seminole in order to handle its production and also the output of its affiliated company, the Indian Territory Illuminating Oil Co., which has participated to good advantage in the field.

Further gains in production at Earlsboro have been hampered by several bad fishing jobs which have resulted in that section, and which are expected to delay the completion of the wells at least 30 days.

Good Wildcat Well

Three miles northeast of Wewoka, J. E. Crosbie and others have a wildcat well in No. 1 Sewell, SE cor. NE SW, Section 15-8-8, which had the regular Smith sand found in Wewoka. The new well found this formation at 3,263 feet, and started flowing 100 bbls. an hour. It was drilled deeper to 3,264 feet, and the flow increased to 120 bbls. hourly, and after several hours, it was again drilled deeper. The total depth is now 3,266 feet, and the well has decreased at the latter depth until it has almost stopped flowing. There has been a slight amount of water showing up in the hole, and the origin of this has not been determined. It is thought it may be coming from up the hole. The well is a north offset to the old gas well drilled some time ago by Champlin & Bass.

In the Oklahoma Panhandle, Ramsey Brothers' No. 1 State land, C NW NE, Section 27-5-5, Cimarron County, is estimated at 20 bbls. after a shot of 20 quarts in the sand 4,094-4,140 feet. The hole bridged after the shot and it is being cleaned out.

In Logan County, the status of T. B. Slick's well, in Section 28-17-1, is unchanged. The well has a good showing of oil from sand 4,658-61 feet, and the owner has continued to buy acreage in the vicinity.

The detailed report of the production of the Seminole Field by companies and leases, giving the average for the week ending Friday, March 4, is given below:

Company and Lease—	Wells	Prod.
Amerada Petroleum Corp.:		
Anderson	1	9,789
Fixico	4	6,391
Killingsworth	4	2,365
Rentie	4	4,277
Total		22,832
Atlantic Oil Producing Co.:		
H. Cudjo	2	6,230
Atlantic-Independent:		
T. Cudjo	1	120
Barnsdall Oil Co.:		
Carter	9	11,283
Jones	1	5,408
Total		16,691
Carter Oil Co.:		
B. Carter	2	210
J. Carter	4	315
F. Carter	4	1,080
Cudjo	3	2,360
Davis	3	3,710
Frazier	2	3,000
Grisso	6	6,630
Knappenberger	4	485
M. Killingsworth	3	5,260
G. Killingsworth	3	1,900
Lukes	2	6,540
Scott	1	165
Stewart	2	1,820
Strothers	1	4,285
Total		37,770
Empire Gas & Fuel Co.:		
Wilson	1	806
Gypsy Oil Co.:		
Butler	2	1,650
Carter	8	2,487
Cudjo	1	2,957
Fixico	8	342
Harjo	1	1,850
*State land	1	7,160
Wolfe	5	9,002
Total		24,548
Independent Oil & Gas Co.:		
P. Fixico	2	1,440
Independent-Garland:		
T. Fixico	8	4,626
Independent-Interocean:		
Jones	4	3,110
Indian Territory Illum. Oil Co.:		
Bowlegs	7	6,896
Davis	1	3,691
Goodin	3	810
Harjo	4	2,022
James	5	1,084
Livingston	1	6,461
Reed	3	47
Total		21,611
Roxana-Kingwood:		
Johnson	2	2,437
Magnolia Petroleum Co.:		
Franks	1	2,258
Mid-Continent Petroleum Corp.:		
Grayson	3	6,515
Rentie	5	4,020
Tayeche	5	2,775
Total		13,310
Mid-Kansas Oil & Gas Co.:		
Johnson	1	153
Philmack-McCulloch:		
Butler	1	2,400
Phillips Petroleum Co.:		
Strothers	1	300
Prairie Oil & Gas Co.:		
Carter	1	198
Gross	6	355
Kinkade	7	10,875
Strothers	6	10,920
Total		22,268
Pure Oil Co.:		
Strothers	15	26,974
Roxana Petroleum Corp.:		
Harber	1	1,055
Lashley	1	69
Total		1,124
Searight and others:		
Youngblood	2	1,680
Sinclair Oil & Gas Co.:		
Carter	2	55
Cudjo A	5	12,595
Cudjo B	1	11,150
*Fixico	2	3,625
Polly	1	2,000
Total		29,335
T. B. Slick:		
Franks	6	18,290
Giblet	1	1,002
Total		19,292
Superior Oil Co.:		
Cudjo	4	6,232
The Texas Company:		
Mayhue	1	120
Tidal-Osage Oil Co.:		
Carter	3	3,120
Fixico	5	10,050
Harjo	5	695
Mahardy	4	1,435
Tayeche	1	2,970
Total		18,270
Turman Oil Co. and others:		
Cudjo	3	6,618
Grisso	1	4,165
Total		10,783
Twin State Oil Co.:		
Jennings	1	160
Earlsboro shallow field	16	3,000
Grand total	253	299,880

*Half Amerada.

By Districts

Township 8-6	10,152
Township 9-6	239,787
Township 10-6	29,982
Township 8-5	19,959
Total	299,880

Wells

Shallow wells	16
Hunton lime wells	35
Wilcox sand wells	202
Total	253

Canadian County

Ramsey Brothers have a rig on the ground for a 4,500-foot test to be No. 1 Dalton, C SE NE, Section 28-11-5w.

Creek County

The Prairie Oil & Gas Co. made location for No. 2 Gilcrease, NW cor. SE SE, Section 33-17-12. Mid-Continent Petroleum Corp.'s No. 1 Friday, NW cor. SE, Section 31-15-9, had a hole full of water in the Wilcox sand at 3,730-68 feet and plugged back to the Peru sand at 2,280-2,340 feet and after a shot of 340 quarts produced 15 bbls. C. G. Tibbons' No. 5 R. Lucas, SE cor. SW NE, Section 31-15-9, had the Peru sand at 2,273-2,329 feet, shot 100 quarts and made 20 bbls. H. C. Wilson's No. 1 Tiger, SW cor. Section 28-17-10, is dry in the Wilcox sand at 3,020-72 feet. McCullouch Oil Co.'s No. 2 Jaconton, SW cor. SE, Section 13-17-10, had water in the Dutcher sand at 2,520-50 feet, drilled to 2,605 feet and was abandoned. Wilcox Oil & Gas Co.'s No. 4 Lindsey, SE cor. NE NE, Section 10-17-9, was given a shot of 40 quarts in the Peru sand at 1,989-2,015 feet and completed for 110 bbls. Sunray Oil Corp.'s No. 1, Lot 13, Block 17, in the Oakhurst Townsite Pool, Section 6-18-12, made 5,172 bbls. from the Turkey Mountain sand at 2,253-61 feet the first 24 hours' gauge. Thompson & Black and Roxana Petroleum Corp.'s No. 1-A Sapulpa, SW cor. NW NE, Section 33-18-11, is a dry hole in the Wilcox sand at 2,330-33 feet. G. & M. Oil Co.'s No. 1 Bell, SE cor. NE, Section 6-18-10, is dry and abandoned at 3,036 feet in the Wilcox sand topped at 3,025 feet. Dixie Oil Co. and Holmes' No. 1 Graham, SW cor. NE NW, Section 4-18-10, had a hole full of water in the Wilcox sand at 2,939-43 feet and has been abandoned. C. G. Tibbons' No. 2 Fobes, SE cor. SW SW, Section 20-15-9, is now a rig on the ground. Carpenter and others' No. 3 Jackson, SE cor. NE SW, Section 22-17-11, is fishing at 2,321 feet.

Kessler Drilling Co. has the rig up for No. 1 Curtis, NE cor. SW, Section 35-19-9. Roxana Petroleum Corp. has built rig for No. 3 Sewell, SE cor. SW NE, Section 18-19-9. C. G. Tibbons Oil & Gas Co.'s No. 1 Callahan, NE cor. SE SE, Section 21-15-8, is a rig. Love & Wolfe's No. 1 Gooden, SW cor. NE NW, Section 16-17-8, is dry and abandoned at 3,546 feet with a hole full of water. Burk-Gries' No. 1 Scruggs, SW cor. NW SW, Section 16-17-8, had sand at 3,469-3,50[illegible] feet and was completed for 360 bbls. after shooting with 40 quarts. Mid-Continent Petroleum Corp.'s No. 28 Stewart, NE cor. SW SE, Section 15-17-[illegible] drilled to total depth of 3,050 feet and plugged back to sand at 2,926-50 feet and is pumping 25 bbls. Devonian Oil Co. has the rig up for No. 7 Miller, CSE SE NE, Section 14-19-8.

Garfield County

Skelly Oil Co. has made the location for No. 1 Wilcox, SE cor. NW, Section 19-23-3w. Marland Oil Co. has completed the rig for No. 1 Whipple, NE cor. SW, Section 19-23-3w. Sinclair Oil & Gas Co.'s No. 56 Hartley, NE cor. SW SW NW, Section 18-22-3w, is drilling at [illegible] feet. The rig is being built for No. 2 East Kisner, NE cor SE NW NE, Section 19-22-3w. Reynolds & Son's No. 1 Smith, SE cor. SW, Section 23-22-4w, is drilling at 618 feet. Sinclair Oil & Gas Co.'s No. 29-A North Walker, SE cor. NE NE, Section 13-22-4w, made 16[illegible] bbls. the first 24 hours from Layton sand at 3,606-78 feet. No. 28 South Walker, SW cor. NE SE, Section 24-22-4w, lost the first hole at 810 feet and skidded the rig. The well is now making 25 bbls. from sand at 1,586-96 feet.

Kay County

Mid-Continent Petroleum Corp.'s No. 6 School Land, SW cor. Section 16-28-1w, has been completed for 154 bbls. in the Wilcox sand at 3,420-37 feet. Comar Oil Co.'s No. 3-W Day, NW cor. NE SE, Section 20-29-1w, was shot with 20 quarts in the Wilcox sand at 3,389-3,40[illegible] feet and produced 92 bbls. No. 1-B Judd, NW cor. NE SE, Section 29-29-1w, has been abandoned at 3,575 feet in the Wilcox sand. Carter Oil Co. and Ona Oil Co.'s No. 1 E. Nixon, SE cor. SW NE, Section 17-29-1, is making 100 bbls. from sand at 2,318-34 feet. Vernon Oil & Gas Co.'s No. 3 Brockhouser, NE cor. SW SE, Section 17-29-1, had sand from 2,35[illegible] feet to 2,337 feet and an initial production of 137 bbls. Globe Oil & Refining Co.'s No. 1 Harris, SE cor. Section 8-27-1w, which was originally completed for 12,000,000 feet of gas, was deepened 2 feet and made 216 bbls. from sand at 3,478-92 feet. Marland Oil Co.'s No. 1 Gaylor, NE cor. SW, Section 19-27-1w has been shut in for 4,500,000 feet of gas from sand at 1,793-1,800 feet. H. A. G. Oil Co.'s No. 1 Buessing, NW cor. SE SE NE, Section 20-27-1, is making 500,000 feet of gas from sand at 924-925 feet. Miller Brothers' No. 1 Robinson, NW cor. SE, Section 1-27-3, is being plugged at depth of 3,659 feet in the lime. Marland Oil Co.'s 5-A North, NW cor. NE NE, Section 12-26-2w, has been abandoned at 3,678 feet on account of a bad cave and a crooked hole. The Prairie Oil & Gas Co.'s No. 9 Smith, SW cor. SE SE, Section 1-26-2w, made 125 bbls. in sand at 3,792-3,845 feet.

Lincoln County

Wilcox Oil & Gas Co. has made the location for No. 1 Bledsoe, NE cor. Section 10-13-6. Phillips Petroleum Co.'s No. 2 Varner, SW cor. NW SE, Section 8-15-6, made 388 bbls. from sand at 4,024-30 feet.

Logan County

Texas Pacific Coal & Oil Co. has the rig on the ground for No. 1 Jewell, NW cor. NE NW, Section 27-18-4w. The rig is being built for No. 1 Speaks, SE cor. NW, Section 33-18-4w. Texas Pacific Coal & Oil Co. and Franklin Oil Co.'s No. 1 Moore, SW cor. NE SE, Section

THE KEWANEE UNION

Bronze threads to iron threads

Can't Corrode*

The thread connection of this Kewanee Union is made by screwing a malleable iron ring on to a thread-end of forged manganese bronze.

It's a joint that is always easily disconnected because there is nothing there to corrode. The threads themselves are made deep and strong so that they will stand thousands of disconnections without getting battered or worn.

The other part of this simple three-piece union is of forged steel which is forced against the softer metal of the bronze thread-end in a ball-joint seat to make a tight, leakless joint.

KEWANEE UNION PRESSURE RATINGS:

SIZE	WSP	TEMP.	HYD.	TEMP.
1" and Smaller	300 lbs.	500 degrees	500 lbs.	100 degrees
1¼" to 3" incl.	250 lbs.	500 degrees	400 lbs.	100 degrees
3½" and 4"	200 lbs.	450 degrees	300 lbs.	100 degrees

5 Points of Advantage

*1. Bronze-to-iron thread connection—no corrosion
2. Bronze-to-steel ball-joint seat—no gasket
3. Solid three-piece construction—no inserted parts
4. Tested by compressed air under water—no defective unions
5. Easily disconnected with a wrench—no force required

WALWORTH

WALWORTH CO., *General Sales Offices:* 51 East 42nd St., N. Y.
Distributors in Principal Cities of the World

Plants at Boston; Kewanee, Ill.; Greensburg, Pa.; and Attalla, Ala.
Walworth International Co., New York, *Foreign Representative*

28-18-4w, has been completed for a 60-bbl. pumper in sand at 4,050-65 feet and 4,086-90 feet.

Oklahoma County

Slick & Bailey completed the rig for No. 1 Lufkin, C NE SE, Section 18-13-3w.

Grady County

Carter Oil Co. made location for No. 1 Nash, NW cor. Section 8-3-5w. Location for No. 6 Walford, SE cor. SW, Section 16-3-5w, has been made. The location for No. 3 C. Kerans was made in the SE cor. NE SE, Section 21-3-5w. Location has also been made for No. 4 Miller, NW cor. SW SW, Section 22-3-5w. Magnolia Petroleum Co. made location for No. 4 E. H. Mitchell, SW cor. NE NW, Section 34-3-5w. Location for No. 3 B. Mitchell was made in the NE cor. NW NW, Section 34-3-5w. Carter Oil Co. has made location for No. 3 Scharmack, SE cor. SW NE, Section 35-3-5w. Clark & Cowden built the rig for No. 2 C. Kerans, SE cor. SW NE, Section 21-3-5w. Magnolia Petroleum Co. made location for No. 1 Harrell, NE cor. SW SW, Section 3-1-5w. Carter Oil Co.'s No. 2 Ray Horton, NE cor. NW NW, Section 8-3-5w, is flowing 92 bbls. from sand at 1,882-1,900 feet. Marland Oil Co.'s No. 1 Popp, SW cor. Section 9-3-5w, drilled to 1,843 feet in sand and plugged back to 1,765 feet and is pumping 65 bbls. Carter Oil Co.'s No. 2 M. Walford, NE cor. SE SW, Section 16-3-5w, is flowing 300 bbls. from sand at 1,740-72 feet. No. 3 Walford, SE cor. NW SW, Section 16-3-5w, is producing 140 bbls. from sands at 1,795-97 and 1,805-18 feet. Marland Oil Co.'s No. 1 Burkes, NE cor. SE NE, Section 17-3-5w, an old well deepened, had sand at 1,820-30 feet and making 65 bbls. Carter Oil Co.'s No. 1 Polson, NW cor. NE SW, Section 27-3-5w, was deepened to sand at 1,480-82 feet and shut in for 28,000,000 feet of gas.

Hughes County

Noble Oil & Gas Co.'s No. 1 Long, SE cor. NW, Section 13-8-9, lost the hole on account of a bad fishing job and has been abandoned at 3,760 feet. Furhman & Newman's No. 1 Buck, SW cor. SE, Section 21-9-10, was completed in sand at 3,082-3,140 feet for 169 bbls. The Prairie Oil & Gas Co.'s No. 1 McAllister, SW SW NE, Section 1-8-8, has been abandoned at 4,488 feet.

Jefferson County

L. C. Hivick has abandoned the location for No. 1 Quick, NW cor. Section 30-7s-6w. Magnolia Petroleum Co. made location for No. 1 C. Smith, SE cor. NE NW, Section 24-7s-6w.

Muskogee County

W. R. Sommerville's No. 1 I. Lewis, SW cor. NW, Section 26-15-17, has been abandoned at 1,608 feet. J. M. Foltz has a machine on the ground for No. 1 Ponds, SE cor. Section 20-15-17. H. E. Williams' No. 6 Manuel, CEL SW NW, Section 17-15-17, is a dry hole at 2,050 feet. E. A. Hutchinson's No. 6 Drew, SE cor. SW SW, Section 31-15-15, is dry at 1,651 feet. Vise & Heflin's No. 3 Grayson, NE cor. NW SW, Section 30-15-15, is dry at 1,535 feet.

Okmulgee County

Wigton & Long and Mid-Continent Petroleum Corp.'s No. 3 Milroy, CEL SE NE, Section 29-13-11, has been completed for 60 bbls. in the Wilcox sand at 3,164-73 feet. W. B. Pine's No. 1 Burton, NE cor. SW NE, Section 4-14-12, an old well deepened to the Wilcox sand at 2,675-2,713 feet, was shot with 23 quarts and made 40 bbls. Devonian Oil Co.'s No. 1-A Willis, NE cor. SW SE, Section 28-16-12, is dry and abandoned in the Wilcox sand at 2,575 86 feet. Penrod & Thompson's No. 2 Brown, NW cor. SE NE, Section 1-14-11, is spudding. W. B. Pine's No. 3 Grayson, SE cor. NW SW, Section 17-12-13, is making 5,000,000 feet of gas from sands at 2,030-43, 2,238-45 and 2,313-19 feet. McCulloch & Unger Brothers' No. 7 Charles, SW cor. NE, Section 31-15-14, an old well deepened, had a hole full of water in sand at 2,297-2,302 feet. A. E. Kirkland's No. 3 Louiney, NW cor. SE, Section 17-15-13, was shot with 60 quarts in sand at 1,320-1,401 feet and made 10 bbls.

Osage County

Mid-Kansas Oil Co.'s No. 1, NE cor. Section 27-27-5, has been abandoned in the Burbank sand at 2,952-3,009 feet, total depth 3,085 feet. Gypsy Oil Co.'s No. 2, SE cor. SW NW, Section 28-27-6, swabbed 40 bbls. after a shot of 120 quarts in the Burbank sand at 2,925-68 feet. Kewanee Oil & Gas Co.'s No. 2, SW cor. SE, Section 34-27-6, produced 1,400 bbls. naturally from the Burbank sand at 2,745-2,833 feet. Phillips Petroleum Co.'s No. 8, NE cor. SE SE, Section 20-26-6, produced 140 bbls. after a shot of 60 quarts in sand at 2,826 56 feet. No. 5, NW cor. SW SW, Section 21-26-6, is making 200 bbls. from the Burbank sand at 2,898-2,948 feet after being shot with 120 quarts. The Texas Company's No. 8, SE cor. SW NE, Section 28-26-6, was shot with 40 quarts and made 50 bbls. on the swab, producing from the Burbank sand at 2,940-3,000 feet. Skelly Oil Co.'s No. 8, SW cor. SE NW, Section 28-26-6, was shot with 130 quarts in the Burbank sand at 2,949-88 feet and made 194 bbls. The Texas Company's No. 11, NW cor. NE, Section 30-25-8, produced 270 bbls. from the Burgess sand at 2,479-83 feet. Peters Petroleum Co.'s No. 1, SW cor. Section 26 25-9, had a hole full of water in the Wilcox sand at 2,499-2,500 feet. Indian Territory Illuminating Oil Co.'s No. 354, NW cor. SE SW, Section 31-25-9, is dry and abandoned at 2,385 feet. Barnsdall Oil Co.'s No. 1, SE cor. SW, Section 16-24-4, missed the Bartlesville sand and is dry in the Wilcox sand at 3,940-55 feet. Indian Territory Illuminating Oil Co.'s No. 360, NE cor. SW SW, Section 29-24-11, is making 1,500,000 feet of gas from the first break in the lime at 1,630-50 feet. Peters Petroleum Co.'s No. 1, SW cor. SE, Section 31-22-10, is a 25-bbl. producer from the Cleveland sand at 1,283-96 feet. Sand Springs Home's No. 101, C NW SE, Section 24-21-9, has been completed for 15,000,000 feet of gas in the Bartlesville sand at 2,071-86 feet. Skelly Oil Co.'s No. 4, NW cor. NE SE, Section 7-21-11, is dry and abandoned at 2,076 feet. Tidal Oil Co.'s No. 12, C SW, Section 15-21-12, is making 10 bbls. from the Bartlesville sand at 1,316-32 feet.

Wah Sha She Oil Co. is rigging up No. 1, NE cor. Section 21-29 9. C. C. Stallings made location for No. 1, NW cor. NE, Section 3-28-4. Midland Oil Co. made location for No. 1, SE cor. NE SW, Section 23-27-11.

Indian Territory Illuminating Oil Co. is rigging up No. 361, SE cor. NW SW, Section 27-25-8. Dunnigan and others' No. 4, SE cor. SW, Section 17-24-9, was deepened from 2,184 feet and is now shut down in the Wilcox sand at 2,507 feet waiting for casing. Winona Oil Co. made location for No. 22, SW cor. NE NE, Section 28-24-10. Gypsy Oil Co. has made location for No. 1, SE cor. NW, Section 17-23-10. Elm Oil Co. has made location for No. 15, NW cor. SE NE, Section 23-22-10. Tidal Oil Co. made location for No. 23, NW cor. SE SW, Section 34-22-10. Ray Branstetter made location for No. 1-A, NE cor. SW NW, Section 26-22-11. W. S. Mitchell made location for No. 10, NW cor. SE NW, Section 7-21-9.

Payne County

Superior Oil Co.'s No. 2 Parmelle, SW cor. SE, Section 31-18-4, is making 7,500,000 feet of gas from sand at 3,660-87 feet. Magnolia Petroleum Co.'s No. 1 Thomas, SE cor. SW, Section 31-18-4, encountered water in sand at 4,128-62 feet and has been abandoned. New England Oil & Pipe Line Co. has built a rotary rig for No. 5 Broyles, SE cor. NW NW, Section 26-18-4. Tidal Oil Co.'s No. 1 Combs, SE cor. SW, Section 12-19-1w, found water at 4,914 feet and was plugged back to sand at 4,714-26 feet, shot with 5 quarts and swabbed 60 bbls.

Pawnee County

Magnolia Petroleum Co.'s No. 1 Dull, SW cor. NW SW, Section 11-20-6, encountered water at 3,214 feet and plugged back to 3,211 feet where the well produced 5 bbls. after a shot of 30 quarts. No. 1 Kline, NE cor. SE SE, Section 10-20-6, was completed for 3,000,000 feet of gas in sand at 3,105-51 feet, and 22 bbls. of oil. Blackwell Oil & Gas Co. has the rig on the ground for No. 2 Hammer, NE cor. SW NE, Section 3-20-6. Stacy & Vaughn's No. 1 Babcock, NE cor. NW SW, Section 6-20-5, is dry and abandoned at 4,017 feet. J. H. Markham, Jr.'s No. 6 Bailey, NE cor. Section 23-21-7, was shot with 40 quarts and is producing 15 bbls. from sand at 1,409-38 feet. J. L. Donahoe and others' No. 1-A Brian, NE cor. NW NE, Section 27-23-4, after reaching a total depth of 3,775 feet, was plugged back to sand at 3,271-98 feet and is making 9,000,000 feet of gas. Mid-Kansas Oil & Gas Co.'s No. 1 Hines, SW cor. SE SW, Section 33-24-5, has been abandoned at 3,800 feet.

Pittsburg County

Quinton Relief Oil & Gas Co.'s No. 1 Bascomb, NW cor. SE, Section 10-7-18, is making 20,000,000 feet of gas from sand topped at 1,760 feet and drilling at 1,792 feet. No. 3 Nottage, SW cor. Section 2-7-18, is dry at 1,820 feet.

Pottawatomie County

Mid-Continent Petroleum Corp. made location for No. 3 McKinley, NE cor. SW, Section 9-9-5. Magnolia Petroleum Co. made the location for No. 1 Lewis, SE cor. NE SE, Section 15-7-4. Independent Oil & Gas Co. and Darby made the location for No. 1 Standridge, NW cor. SW, Section 14-7-4. J. W. McCullough's No. 1 Madgett, NW cor., Section 25-10-4, has been completed as a dry hole in the Wilcox sand at 4,982-85 feet.

Seminole County

Turman Oil Co.'s No. 2 Cudjo, SE cor. SW NW, Section 35-9-6, in the Seminole Pool, made 1,518 bbls. first 24 hours from the Wilcox sand at 4,198-4,214 feet after a 15-quart shot. Superior Oil Co.'s No. 3 Cudjo, SE cor. NW, Section 35-9-6, was completed for 2,084 bbls. in the Wilcox sand at 4,044-69 feet. T. B. Slick's No. 1 Giblet, NW cor. NE SE, Section 35-9-6, is making 1,023 bbls. from the Wilcox sand at 4,118-36 feet. Turman Oil Co.'s No. 1 Grisso, NE cor. SW NW, Section 35-9-6, had an initial production of 4,236 bbls. from the Wilcox sand at 4,016-33 feet. Independent Oil & Gas Co. and Interocean Oil Co.'s No. 4 Jones, SE cor. SW SE, Section 26-9-6, swabbed 350 bbls. and when put on air pressure made 1,000 bbls. from the Wilcox sand at 3,970-4,025 feet. Indian Territory Illuminating Oil Co.'s No. 1 James, NW cor. SE, Section 24-9-6, had the Wilcox sand at 4,215-89 feet and plugged back to 4,012 feet and made 7 bbls. from the Hunton lime. Tidal Oil Co.'s No. 5 Harjo, NE cor. SW SE, Section 23-9-6, shot 40 quarts in the Wilcox sand at 4,138-47 feet and made 85 bbls. Pure Oil Co.'s No. 14 Strothers, NW cor. SW SW, Section 26-9-6, made 4,048 bbls. from the Wilcox sand at 3,955-70 feet. No. 12 Strothers SE cor. SW SW, Section 26-9-6, made 110 bbls. naturally, put on air and flowed 1,665 bbls. from the Wilcox sand at 3,975-4,020 feet. Sinclair Oil & Gas Co.'s No. 1 Polly, NW cor. SW NW, Section 3-9-6, made 2,325 bbls. the first 24 hours from the Wilcox sand at 4,346-53 feet. Searight and others' No. 2 Youngblood, NE cor. SE, Section 33-10-6, has been abandoned at 4,309 feet in the Wilcox sand which carried water. Darby Petroleum Co. and Lyons Petroleum Co.'s No. 1 Bruner, NW cor. NE, Section 19-10-6, a location, has been abandoned. Carter Oil Co.'s No. 5 M. Killing, SW cor. SE NW, Section 23-9-6, flowed 3,077 bbls. by air from the Wilcox sand at 4,124-55 feet. No. 5 Grisso, NE cor.

(Continued on Page 85)

COWLEY COUNTY, KANSAS, HOPEFUL OF ANOTHER RAINBOW BEND POOL

By J. L. Dwyer
Staff Correspondent, Kansas Fields

What may be another Rainbow Bend in Cowley County, Kansas, has been touched by the Independent Oil & Gas Co., Barnsdall Oil Co. and Marland Oil Co., owners of the famous Rainbow Bend Pool. The new well is No. 1 East Thurlow, NW cor. SW Section 8-33-3, 1½ miles west of the producing limits of the o'd pool, and is just across the river. The regular sand was found 3,499-3,500 feet, and the hole filled up 1,500 feet with oil in 45 minutes. It has made three small flows, and is shut down pending the building of tankage.

Coffey County has its share of wildcatting interest. R. F. Garland has made a location in Section 9-22-15, and three other new locations have been staked. These have been made in an attempt to extend the Golden Land pools of Greenwood County.

Barber County

Barbara Oil Co.'s No. 1 Alexander, C SE, Section 13-33-13, was shut in for 5,000,000 feet of gas from sand 4,440-47, feet.

Butler County

Burford & Brimm made the location for No. 1 Lambert, SW cor. SE SW, Section 20-25-7. Pryor & Lockhart completed the rig for No. 1 Dickerson, NW cor. NE, Section 9-26-3. Barnsdall O.l Co.'s No. 1 Hoerman, NE cor. NW SW, Section 20-26-3, is a 150-bbl. well in sand 2,859-60 feet. The location has been made for No. 1 Marmane, SE cor. SW NW, Section 20-26-3. Tidal Oil Co. has made location for No. 3 Blankenship, SW cor. SE, Section 17-26-8. Rogers and others' No. 14 Drum Bitler, SW cor. NW SE, Section 20-26-8, is rigging up. Mid-Kansas Oil & Gas Co. has the rig on the ground for No. 6 Blakeman, SE cor. SW, Section 3-28-6. Shawver & Sutter made the location for No. 1 Mathews, NE cor. NW NW, Section 26-26-6.

Chase County

Empire Gas & Fuel Co.'s No. 7 Lipps, C NW NW Section 29-18-7, has been abandoned at 1,131 feet. Niebert and others' No. 3 Lipps, C NW SW, Section 29-18-7, is drilling at 500 feet.

Chautauqua County

Griffeth, Bell and others' No. 2 Oliver, C SW NW, Section 1-32-10, is drilling at 1,685 feet. Jens Marie Oil Co. made the location for No. 1 Fisher, SW cor. NW, Section 4-34-9.

Cowley County

Pyle and others' No. 1 Beiswanger, SW cor. NE, Section 30-30-3, is dry and abandoned at 3,604 feet. Sinclair Oil & Gas Co.'s No. 1 Cook, SW cor. NE NE, Section 6-31-3, has been abandoned at 3,566 feet. The Texas Company made location for No. 1 Willis, NW cor. NE, Section 18-31-3. The location has also been made for No. 14 Eastman, SW cor. NW NE, Section 6-31-6. Empire Gas & Fuel Co.'s No. 1 McCormick, NE cor. NW SE, Section 13-31-7, was shot with 40 quarts and abandoned at 2,660 feet. Forrester & Dial staked the location for No. 1 Oliverson, NW cor. SE NW, Section 22-32-4. Skelton & Engles made location for No. 1 Coleman, SW cor. NE, Section 6-33-4. Forrester and others' No. 1 Reynolds, NW cor. NE, Section 4-33-7, was deepened to sand 2,419-24 feet and made 75 bbls.

Elk County

Arkansas Fuel Oil Co.'s No. 1 Keck, CWL E half W half, Section 17-29-10, is making 3,000,000 feet of gas from sand 1,300-12 feet. Page Oil Co.'s No. 1 Denton, NW cor. Section 10-31-8, is dry and abandoned at 2,702 feet. Smith, Ash and others' No. 1 Logston "A," NW cor. NE, Section 16-31-9, was shot with 60 quarts in sand 2,260-84 feet and made 30 bbls. Union Gas Corp. made location for No. 10 Leffingwell, SE cor. SW SE SW, Section 14-31-10. Frazier, Fowler and others made location for No. 2 Webb, NE cor. NW, Section 23-31-10.

GREENWOOD COUNTY

Stark and others' No. 1 Hind, SE cor.

(Continued on Page 86)

TRANSIT

River Clamps

The old reliable TRANSIT River Clamps have been the choice of experienced pipe line builders for over forty years. In all that time we have never had a complaint.

They are made heavy and rigid, and always outlast the pipe itself. The extra weight helps to hold the line securely to the bottom of the river.

When the bolts are tightened, the entire inner circumference of a TRANSIT River Clamp grips the whole outside diameter of the pipe and collar. Each clamp is tested to see that it does this before it leaves the factory.

It is too costly for you to experiment with fittings that go to the bottom of a river; therefore, specify TRANSIT River Clamps and be sure.

Made in all sizes and types.

NATIONAL TRANSIT
PUMP & MACHINE CO.
OIL CITY, PA.

NEW YORK PHILADELPHIA PITTSBURGH CLEVELAND
HOUSTON DENVER TULSA

Smackover Has Deeper Sand Showing

Sand Cored at 4,010-18 feet and Crew Resetting Packer in Effort to Get Fair Test of the Well

By James H. Dameron
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Mar. 7.—Smackover's decline to a field producing less than 100,000 bbls. of heavy oil for the first time in months, and the same field's threat to stage a comeback as a deep-sand producer, featured the week of news from the proven territories of Louisiana and Arkansas.

The natural decline of old wells in Smackover heavy oil district has pulled the daily average of that field down to 99,500 bbls. Since early in April, 1925, the field has been producing more than 100,000 bbls. of heavy oil daily. Its peak was reached in May, 1925, when the daily average production for the field during the month was 338,800 bbls. Considering the light oil district of Smackover the field is still producing more than 110,000 bbls. of crude daily.

Sunny Jim Oil Co.'s No. 12 Berry, Section 33-15-15, which has threatened several times to open up the field, that has produced approximately 215,000,000 bbls. of crude, for deeper sand production, holds out hope for a play around 4,000 feet. The test cored sand showing oil at 4,010-18 feet and a string of 3-inch pipe with a packer was set for a test. The hole was swabbed a couple of hours and salt water flooded the hole. The packer failed to hold and the water is believed to be coming from salt water sand at 3,932 feet. The crew is resetting the packer in an effort to get a fair test of the showing.

Six new wells in Smackover during the past week had a combined production of 600 bbls. A 50-bbl. well in Nevada County brought Arkansas' total new production up to 650 bbls. Louisiana recorded five new producers with a combined production of 360 bbls. and one gas well in the Springhill area making 11,000,000 feet of gas.

Pleasant Hill and Rayville

Pleasant Hill in Sabine Parish and Rayville in Louisiana are dividing the honors in Louisiana. In the Pleasant Hill area where the Arkansas Fuel Oil Co.'s No. 1 Logan, Section 33-10-12, was bailed in making 500 bbls., five wells are drilling and a derrick is up for another. The Arkansas company's west offset to the well and the offset a quarter of a mile northwest are checking the formations regularly, but the southeast diagonal offset is checking irregularly. The discovery well, which is more than a month old, produced 260 bbls. for the 24-hour period ending Saturday morning.

To the south and west where L. M. Emlet's Blue Lake well, No. 7 Bowman, Section 14-7-14, got a showing in the chalk rock, reaming for a test is proving to be slow work. Only 15 feet of the hard chalk rock was reamed down last week. The bottom of the hole is 2,623 feet and the chalk rock is to be tested with a sand tester.

Magnolia Petroleum Co.'s No. 1 Mason, Section 28-12-11, between the Bull Bayou Field and the Dolett Hills area, encountered a showing at 2,750 feet during the latter part of the week. The crew started bailing the well Saturday morning and it was showing a little oil.

Ruston Drilling Co.'s No. 1 O'Neal, Section 35-17-6e, in the Rayville territory, is the most interesting operation in that area. It is 1½ miles east of the Palmer Corp.'s No. 1 Colvin, Section 33-17-6e, which was completed at 2,422-32 feet making 20,000,000 feet of gas, and it is believed to be producing from the Trinity sand. No. 1 O'Neal tried to blow out at 2,376-77 feet and heavy mud was pumped into the hole. Saturday morning the well was drilling black shale at 2,384 feet and a core is to be taken. The producing sand in No. 1 Colvin is expected to be picked up within the next 20 or 30 feet of drilling at No. 1 O'Neal. Six-inch casing was cemented at 2,278 feet at Gulf Refining Co.'s No. 1 Marshfield, Section 30-17-6e, which is about 2 miles northwest of the Palmer Corp.'s well.

Carterville Area

Carterville, in northern Bossier Parish, will probably be eventful in the next week or 10 days. The 8¼-inch casing is being cemented on top of the cap rock at 3,064 feet, overlying the Woodbine sand, at Woodley and Collins' No. 2 L. & A., Section 14-23-12. No. 2 L. & A. is about 1½ miles northeast of No. 1 Roberson, which is a 40,000,000-foot gas well in the Woodbine. The sand was penetrated only a few feet in No. 1 Roberson and it is expected the Woodbine will be given a deeper penetration in No. 2 L. & A. About one-half mile to the southwest, Bahan and associates' No. 1 Mays, Section 27-23-12, topped the cap rock at 3,082 feet and 6-inch casing is being set.

Humble Oil & Refining Co. is reported to be preparing to drill a deep test in the Bellevue shallow field which produces a 20 gravity oil from sand found around 350 to 400 feet. A derrick is up for Humble company's No. 30 Bliss & Wetherbee, Section 15-19-11.

Four tests are drilling in northeastern Mississippi. Buffalo Oil Co.'s No. 1, Section 4-13-18, is drilling hard rock at 445 feet. Quincy Oil Co.'s No. 1 Durrett, Section 29-13-17, is still having trouble carrying casing through the gravel and is drilling at 470 feet. Amory Petroleum Co.'s No. 1 Hall, Section 8-13-17, is drilling at 800 feet and the same company's No. 1 Carter, Section 12-13-18, is drilling at 619 feet. Arkansas Fuel Oil Co.'s No. 1 Davis, Section 5-5-2w, 8 miles north of Mobile, Ala., is drilling gumbo at 3,000 feet. No test was made at 2,650 feet, where a showing was encountered.

The division lost 1,760 bbls. in daily average production during the week. Arkansas fields declined 1,300 bbls. and Louisiana fields declined 460 bbls.

PRODUCTION BY FIELDS

Louisiana	
Caddo light	10,025
Caddo heavy	4,570
Homer	5,345
Haynesville	8,155
De Soto and Red River	4,070
Elm Grove	700
Bellevue	1,510
Cotton Valley	6,105
Urania	12,085
Total	52,565
Arkansas	
Smackover heavy	99,450
Smackover light	11,675
El Dorado	6,060
Lisbon	5,025
Stephens	1,400
Nevada	1,815
Bradley	225
Total	125,650
Total both states	178,215
Total last week	179,975
Loss	1,760

Union County

Gladys Belle Oil Co.'s No. 11 Cook, Section 16-16-15, is a 25-bbl. pumper from sand at 2,605-12 feet. Hollyfield and associates' No. 17 Giller, Section 10-16-15, was completed in sand at 1,942-53 feet, pumping 35 bbls. Imperial Oil & Gas Co.'s No. 6 Murphy, Section 9-16-15, was put on the beam and made 60 bbls. the first 15 hours from sand at 2,730-45 feet. Natural Gas & Fuel Corp.'s No. 3 Bilyew, Section 9-16-15, is pumping 240 bbls. of fluid, 12 per cent b. s. from sand at 2,298 to 2,305 feet. On the Ouachita County side of Smackover, the Gulf Refining Co. completed two good wells. No. A-24 Umsted, Section 33-15-15, was completed in sand at 2,355-63 feet and is making 110 bbls. No. 13 Goodwin, Section 32-15-15, was completed in sand at 2,388-92 feet pumping 185 bbls. of fluid, 45 per cent salt water.

Eason and associates' No. A-9 Murphy, Section 15-16-15, has 600 feet of fluid in the hole from sand at 2,614-19 feet and is waiting for a standard rig. W. H. Gilliland's No. B-1 Hodges, Section 1-16-17, is drilling at 1,608 feet. A derrick is up for Gulf Refining Co.'s No. 23 T. C. Murphy, 660 feet south and 1,520 feet east C Section 9-16-15. The rig was moved, and Hatfield and associates' No. 3 Ennis, Section 23-17-16, was temporarily abandoned at 2,712 feet. Six-inch was cemented at 2,135 feet at Humble Oil & Refining Co.'s No. 6 Goodwin, Section 20-17-16. Imperial Oil & Gas Co.'s No. 4 Murphy, Section 9-16-15, formerly completed at 2,105 feet, pumping 150 bbls., is being rigged up to deepen. Drillers milled out of the casing at 1,550 feet, and Imperial Oil & Gas Co.'s No. 5 Murphy, Section 9-16-15, is drilling at 1,679 feet.

Keen & Woolf Oil Co.'s No. 4 Murphy, Section 9-16-15, is being washed to the bottom at 2,718 feet. The drill stem is being fished out at 2,605 feet at Louisiana Oil Refining Corp.'s No. B-3 Murphy, Section 9-16-15. One joint of the drill stem is being fished out at 2,300 feet at Lion Oil & Refining Co.'s No. A-9 Flenniken, Section 10-16-15. The bottom of the hole at 2,501 feet was cemented at Lion company's No. 6 Hardy-Murphy, Section 9-16-15, and it will be whipstocked at 1,975 feet. Junk is being sidetracked at 2,773 feet at Lion company's No. D-7 Murphy, Section 8-16-15. Magnolia Petroleum Co.'s No. 5 Childs, Section 8-16-16, is drilling red shale at 3,160 feet. Six-inch was cemented at 2,625 feet at Magnolia company's No. 10 Hatfield, Section 7-16-15. Same company's No. 1 Childs, Section 8-16-16, was bailed dry at 2,624 feet and is drilling ahead at 2,645 feet. Derricks are up for Magnolia company's No. 6 Wilson, SE cor. N half NE NW, and No. 7 Wilson, 604 feet east and 150 feet north SW cor. N half NE NW, both in Section 17-16-15.

Mounts and associates' No. 6 Pratt, Section 8-18-15, is drilling at 168 feet. A short string of 4-inch casing was cemented at 2,709 feet at O. G. Murphy's No. 3 T. C. Murphy, Section 9-16-15. Eight and one-fourth inch casing was cemented at 2,679 feet at O. G. Murphy's No. 9 T. C. Murphy, Section 9-16-15. National Consolidated Petroleum Co.'s No. 2 Fagg, Section 8-16-16, is a rig. Eighty feet of the drill stem was lost in the hole at Natural Gas & Fuel Corp.'s No. 4 Flenniken, Section 8-16-15, and arrangements are being made to cement back from 2,800 feet to 2,400 feet and test sand at that depth. The test cored oil sand at 2,763-69 feet. Same company's No. F-1 Murphy, Section 9-16-15, is drilling at 2,718 feet. Four and one-half inch casing was cemented at 2,704 feet at Ohio Oil Co.'s No. 7 Murphy, Section 9-16-15.

Peer Oil Corp.'s No. B-7 Palmer, Section 9-16-15, is drilling at 1,850 feet. The bit and collar are being sidetracked at 2,254 feet at A. H. Ramage's No. C-11 Lawton, Section 10-16-15. Casing was

GEORGETOWN SEMIWILDCAT WELL MOST INTERESTING OF COMPLETIONS

By James H. Dameron

SHREVEPORT, La., Mar. 7.—Gulf Refining Co.'s semiwildcat completion, in the Georgetown area of Grant Parish, was the most interesting of the wildcat completions during the week. The well, No. 2-A L. C. Swope, Section 17-9-1e, is being produced with air and is making 150 bbls. of oil and considerable salt water from sand at 1,603-07 feet. It is an offset to an 80-bbl. pumper and is the largest producer of the handful of pumpers in that area. Completion of the well stimulated activity there slightly. Gulf company has made location for another test and Paulette and associates have started a new test in that area.

The Georgetown completion and the abandonment of an old failure in Natchitoches Parish made up the completion list for Louisiana wildcats. Two 3,100-foot failures and a 3,000-foot failure summed up the wildcat completions in Arkansas. All were in Union County. Field reports from the wildcat territories were void of sensational news as most tests are either at uninteresting depths or are approaching interesting depths.

Activity in northern Bossier Parish in the Carterville area was on the increase with five wildcats drilling and another being rigged. Woodley & Collins' No. 2 L. & A., Section 14-23-12, a mile northeast of their 40,000,000-foot wildcat gas well, should top the Woodbine sand early next week. Last reports from the well were that the bit is going through shale at 3,010 feet. The Woodbine is found around 3,100 feet in Carterville. Another interesting test in Bossier Parish is soon to be drilled to the Nacatoch sand by the Simms Oil Co., on what is known as the Philmore block. Two tests have been drilled to the Nacatoch sand there and both made good showings of oil.

Eight tests are drilling in the Rayville area of Richland Parish and four new tests for that area were announced during the week. Four of the drilling wells are nearing the pay horizon found around 2,340 feet and below 2,400 feet.

In Lawson Area

In the Lawson area of Union County, Simms Oil Co.'s No. 1 Ballard, Section 9-18-13, was put on the beam and is pumping 450 bbls. of salt water and 30 bbls. of oil from sand at 2,551-56 feet. Drillers will change the working barrel. Two of Arkansas' failures during the past week were drilled in the Lawson territory. Marine Oil Co. has a rig up for another test and has made location for still another. Northeast of the El Dorado East Field, Ohio Oil Co.'s No. 1 Crain, Section 1-17-14, was tested with a sand tester at 2,511-90 feet and was dry.

Union County

Superior Oil Corp.'s No. 1 Cordell, Section 5-18-13, in the Lawson area, was abandoned at 2,984 feet. The casing was pulled. In the same general area, Wingfield and associates' No. 1 Morrison, Section 3-19-13, was abandoned at 3,105 feet after the casing had been pulled. Calgo Oil Co.'s No. 1 Primm, Section 9-18-17, was abandoned with the casing in the hole at 3,105 feet.

Twelve and one-half inch casing was

(Continued on Page 186)

Three Points of Attack

Hard water attacks low operating costs from three angles—cooling coils, cooling jackets and boilers.

From one of these angles even capital investments are jeopardized, as in the case of cooling jackets for oil and gas engines.

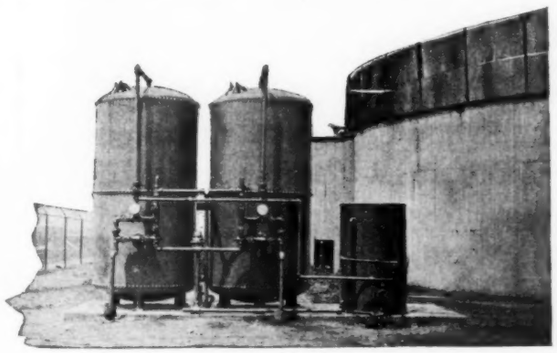
The best way of meeting this attack is by blocking it entirely. Use the same water supply but so treat it at the plant that it is rendered harmless.

Paige-Jones engineers have been called in by a number of refineries to help block this constant attack by hard water. From the several softening methods at their disposal, Paige-Jones engineers were able to install the best system for the particular conditions.

If you suspect that water is lowering the efficiency in any or all of these three points—coils, jackets and boilers—ask one of our engineers to call.

Soft water may be what your plant needs.

Paige & Jones Chemical Co., Inc.
General Sales Office,
Technical Dept. & Works:
HAMMOND, INDIANA
Executive Offices:
461 FOURTH AVE., NEW YORK
Offices in Principal Cities



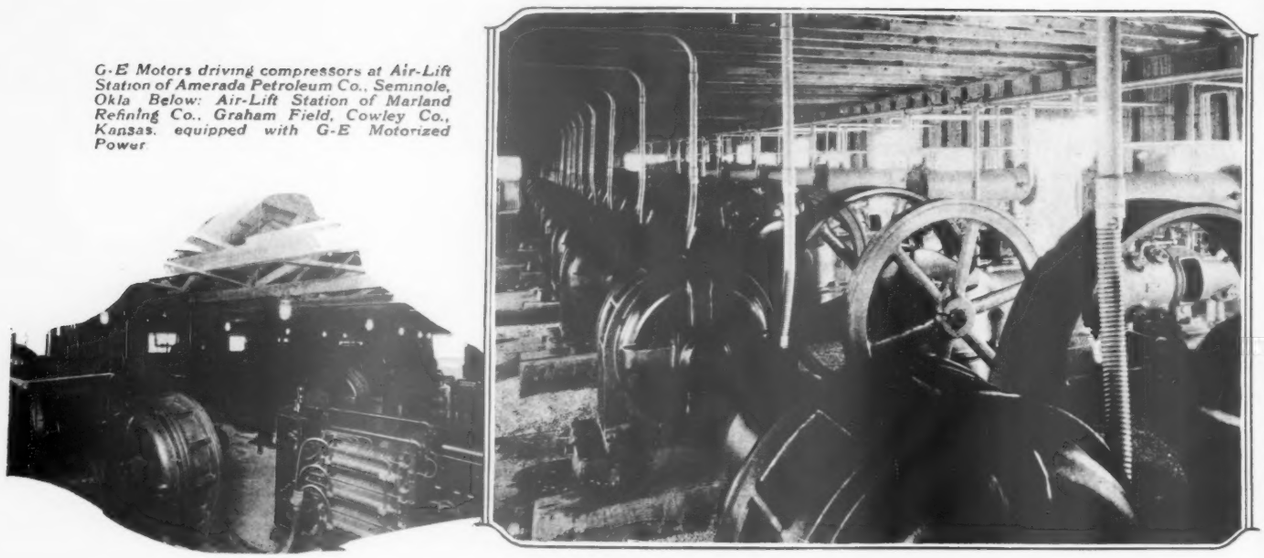
Some of the refineries using Paige-Jones rapid rate upward flow zeolite softeners—

Phillips Petroleum Co.
Sinclair Oil & Gas Co.
Globe Gasoline Co.
California Gasoline Co.
Empire Gas & Fuel Co.
Gilmore Oil Company

Paige-Jones originated and developed the rapid rate upward flow zeolite softener.

PAIGE & JONES
WATER SOFTENING

ZEOLITE AND LIME SODA SOFTENERS · PRESSURE SAND FILTERS
BOILER FEED WATER TREATMENTS · HOUSEHOLD WATER SOFTENERS



G-E Motors driving compressors at Air-Lift Station of Amerada Petroleum Co., Seminole, Okla. Below: Air-Lift Station of Marland Refining Co., Graham Field, Cowley Co., Kansas, equipped with G-E Motorized Power

Motorizing the Air-Lift

A sudden big demand for motorized air-lifts! G-E motors were ready.

Of the first 5000 horsepower in electric motors purchased last fall for the Seminole, Okla. field, 4000 h.p. was General Electric—mostly for air-lift work.

G-E motors, time-tried in the oil fields, and proof against shut-downs, were installed because oil operators knew that shut-down losses are seldom, if ever, recovered—and that G-E motors were in stock near their operations, ready for immediate use, backed by G-E service.

The air-lift development in every oil field finds G-E Motors, G-E Service, and on-the-spot distribution a powerful tool to its hand.

General Electric supplies complete electric equipment to the oil industry. With warehouse facilities close to your operations, G-E readily furnishes motors, controllers, transformers, arresters and other protective devices, capacitors for power factor improvement, etc.

G-E oil field specialists and G-E service at: Dallas, Denver, Houston, Kansas City, Oklahoma City, Tulsa, Los Angeles, San Francisco.

Apply the proper G-E Motor and the correct G-E Controller to a specific task, following the recommendations of G-E specialists in electric drive, and you have G-E Motorized Power

Motorized Power
—fitted to every need

200-52A

GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN PRINCIPAL CITIES

perforated at 2,579-84 feet at C. L. Saxon's No. 3 fee, Section 4-16-16, and there is 1,200 feet of fluid in the hole. The well is being put on the beam, total depth 2,681 feet. Sun Oil Co.'s No. 20 Hays, Section 3-16-15, is drilling at 2,310 feet. Six-inch casing was cemented at 2,756 feet at Stewart and associates' No. 7 Murphy, Section 9-16-15. The Texas Company's No. 5 Saxon, Section 4-16-16, has 1,200 feet of fluid in the hole from sand at 2,604-09 feet and is being bailed. Unity Petroleum Co.'s No. 15 Roper, Section 3-16-15, is a derrick.

Ouachita County

Six-inch casing was cemented at 1,982 feet at H. E. Clark's No. 3 Shirley, Section 36-15-17. Copenhaven and associates' No. 3 Berg, Section 13-15-17, is a derrick. Exchange Oil Co.'s No. 3 Umsted, Section 4-16-15, is a derrick. Gulf Refining Co.'s No. 10 R. Bennett, 711 feet north and 606 feet west SE cor. SW Section 33-15-15, is a rig. Gulf company's No. A-25 Umsted, 570 feet south and 617 feet east C Section 33-15-15, is a rig. Magnolia Petroleum Co.'s No. 3 H. Smith, Section 36-15-17, has broken sand at 2,281-96 feet and is waiting for a standard rig. Thirteen and three-eighths inch pipe was set at 167 feet, and Magnolia Petroleum Corp.'s No. 4 H. Smith, Section 36-15-17, is drilling at 1,400 feet.

Middlesex Oil Co.'s No. 4 Shirley, Section 36-15-17, is drilling at 2,000 feet. Six-inch casing was cemented at 2,614 feet at Simms Oil Co.'s No. 7 J. E. Murphy, Section 28-15-15. Sunny Jim Oil Co.'s No. 12 Berry, Section 33-15-15, cored sand showing oil at 4,010-15 feet and is being cored at 4,017 feet. A. M. Sutton's No. 2 Schoolhouse, Section 28-15-16, has been temporarily abandoned at 3,063 feet. The bottom of the hole at 2,312 feet, and Texas & Pacific Coal & Oil Co.'s No. 9 Laney, Section 31-15-15, is being rigged to drill deeper with standard tools. Arrangements are being made to set 5⅜-inch casing at 2,387 feet at Unity Petroleum Co.'s No. 8-A Umsted, Section 33-15-15. Magnolia Petroleum Co.'s No. 2 Gosden, 254 feet north and 154 feet west SE cor. SE SW Section 15-15-19, is a rig. Wesson and associates' No. 1 Pelican, Section 22-15-19, had sand at 2,153-58 feet and is waiting for a standard rig.

Columbia County

Arkansas Fuel Oil Co.'s No. 1 Barge, Section 14-18-22, is drilling sandy shale at 2,021 feet. Colquitt & Thomas' No. 1 Duffer, Section 23-18-19, is a rig. Columbia Oil Syndicate's No. 1 Whitehead, Section 14-19-23, is shut down at 2,142 feet for rig repairs.

Nevada County

Dixie Oil Co.'s No. 3 Womack, Section 10-14-21, was completed in sand at 1,168-76 feet, pumping 50 bbls. Advance Oil Co.'s No. 1 Atkins, Section 9-14-21, had sand at 1,239-51 feet, and is waiting for a standard rig. Autrey Oil Co.'s No. 2 McKinney, 150 feet south and west NE cor. NE SE Section 9-14-21, is a derrick. Humble Oil & Refining Co.'s No. 4 Bodcaw, Section 9-15-22, is being reamed to the bottom at 3,595 feet. Martin and associates' No. 1 Haynie, Section 6-14-20, is drilling at 760 feet.

Bossier Parish

The Springhill gas field scored with another completion when Oil Fields Gas Co.'s No. 4 Bollinger, Section 38-23-11, was completed at 2,647 feet, making 11,000,000 feet of gas. In the Elm Grove area, arrangements are being made to set 6-inch casing at 1,535 feet at Gulf Refining Co.'s No. 6 Hodges, Section 24-16-12. Humble Oil & Refining Co.'s No. 30 Bliss and Wetherbee, 660 feet north and west SE cor. SE NW Section 15-19-11, in the Bellevue shallow field, is a derrick. Palmer Corp.'s deep test in Elm Grove, No. 3 Bossier L. & L. S. Co., Section 9-16-11, is drilling lime at 3,782 feet. In the same area, The Texas Company's No. 5 Caplis, Section 24-16-12, is to be tested at 1,861 feet; No. 14 is a derrick.

Caddo Parish

The Texas Company's No. 58 Harrell, Section 4-21-16, was the best completion in the sprinkling of Caddo completions. It was good for 50 bbls. on the pump from sand at 2,386 feet. Dixie Oil Co.'s No. 83 Robertshaw, Section 14-21-15, was good for 10 bbls. on the beam at 1,720. West Louisiana Gas Co.'s No. 2 Stringfellow, Section 19-17-16, in the Waskom area, was junked and abandoned at 2,540 feet.

A derrick is up for L. A. Berstonn's No. 6 Murff, 820 feet west and 720 feet south NE cor. SE Section 12-21-16. Six-inch casing was cemented at 1,400 feet at Bethany Oil & Gas Co.'s No. 1 Offenhauser, Section 1-20-16. Big Lake Oil Co.'s No. 1 Rodessa, Section 23-23-16, is drilling at 2,000 feet. Dixie Oil Co.'s No. A-2 Noel, Section 13-21-15, is drilling lime at 3,510 feet. Same company's No. 81 Robertshaw, Section 13-21-15, is being cored at 3,694 feet; 8-inch pipe was cemented at 1,486 feet at No. 84 Robertshaw, and No. 85 Robertshaw, 2,190 feet north and 1,230 feet west SE cor. Section 14-21-15, is a rig. Dixie company's No. 10 Slattery, Section 27-21-15, is being cored at 3,754 feet. A derrick is up for W. W. Dobson and associates' No. 4 Rives, 1,120 feet east and 200 feet south NW cor. NE Section 5-20-16. J. B. Files and associates' No. 1 Payne, formerly Ackerman and associates' No. 1 Payne, 1,270 feet north and 100 feet east SW cor. NW Section 35-23-16, is drilling at 80 feet and 10-inch pipe is to be set at 90 feet. Location was staked for A. C. Glassell's No. 1 Thigpen & Herold, 660 feet north and 660 feet east SW cor. Section 26-18-16.

Two new operations were announced for the Gulf Refining Co.'s Ferry Lake lease; No. 266 Ferry Lake, 1,620 feet south and 1,420 feet west NE cor. Section 28-20-16, is a derrick; location was made for No. 267 Ferry Lake, 2,020 feet west and 2,340 feet south NE cor. Section 28-20-16. Gulf company's No. 264 Ferry Lake, Section 22-20-16, is being bailed to test at 2,265 feet, and 6-inch casing was cemented at 2,140 feet at No. 265 in Section 28-20-16. Lewis Oil Corp.'s No. 8 Caddo M. L. Co., Section 24-22-15, tested dry at 1,824 feet and is shut down for orders.

Caddo Drilling

The following are the status of drilling operations on the Magnolia Petroleum Co.'s Caddo Parish leases: Eight-inch plug is being drilled at No. 1 Bell, Section 6-17-16, at 2,590 feet; No. 2 Caddo Levee Board, Section 8-20-15, is drilling shale at 2,667 feet; No. 15 Dillon, Section 24-21-15, was temporarily abandoned at 1,750 feet; 8-inch casing was cemented at 95 feet and No. 19 Dillon, 1,150 feet south and 150 feet east NW cor. Section 24-21-15, is drilling at 105 feet; No. 16 Doan Thigpen, Section 6-20-15, is waiting for a standard rig at 1,604 feet; No. 17 Doan Thigpen is being rigged; No. 4 Planters, Section 7-21-14, tested dry with a showing of oil at 1,620 feet and is to be deepened; No. 20 Robertshaw, Section 22-21-15, is drilling lime at 2,455 feet. J. M. Miller's No. 6 Solley, Section 22-21-15, is drilling at 1,600 feet. Six-inch casing was cemented at 2,543 feet at Owl Oil Co.'s No. 2 Wilburn, Section 4-17-16, and location was made for No. 3 Wilburn, 660 feet south and 660 feet east NW cor. NW SE Section 4-17-16. Shreveport Oil Corp.'s No. 1 State, Section 28-21-15, is a derrick, and a derrick is being built for No. 2, Section 27-21-15.

Ten-inch casing was set at 344 feet, and Standard Oil Co.'s No. 177 Files, Section 33-21-16, is drilling ahead at 1,500 feet. A derrick is up for Standard company's No. 178 Stiles, 1,098 feet south and 114 feet east C Section 33-21-16. Standard company's No. 1 Trosper, Section 34-18-16, is drilling chalk rock at 1,410 feet. Thomason and associates' No. 7 Muslow fee, Section 31-21-15, tested salt water at 1,860 feet and is to be deepened. Woodley Petroleum Co.'s No. 3 Muslow, Section 32-21-15, is being bailed to test at 1,765 feet. Tholl Oil Co.'s No. 1 Edson, Section 23-21-15, is waiting for a standard rig at 1,700 feet. Victor Wenzel's No. 3 Thomas, Section 15-20-15, is a rig.

The Texas Company has six wells drilling in Caddo Parish. No. 47 C. M. L. Co., Section 23-21-15, is drilling gumbo at 3,457 feet. The drill stem is being fished for at 2,960 feet at No. 2 Glassell, Section 14-20-16. Ten-inch was set at 38 feet, and No. 1 Hardy, 920 feet south and 245 feet west NE cor. Section 10-20-16, is drilling ahead at 1,845 feet. Six-inch was cemented at 2,396 feet at No. 56 Harrell, Section 4-21-16, total depth 2,408 feet. No. 5 J. F. Herndon, Section 14-21-15, is drilling lime at 3,058 feet. No. 5 Hicks and Payne, Section 21-21-15, is drilling chalk rock at 1,580 feet.

LaSalle Parish

In the northern extension of the Urania Field, Youngblood and associates' No. 1 Urania, Section 7-10-2e, was completed in sand at 1,507-16 feet, flowing 1,000 bbls. of fluid, 90 per cent salt water and 10 per cent oil. Louisiana Oil Refining Corp.'s No. B-2 Tremont, Section 30-10-2e, was completed in sand at 1,567-70 feet, pumping 100 bbls. of fluid, 45 per cent salt water. The only new operation in Urania and the only rig running in that field is Modisette Drilling Co.'s No. 4 Urania, 330 feet and 600 feet north SW cor. NE NE Section 7-10-2e.

Monroe District

Ouachita Natural Gas Co.'s No. 8 Allison, Section 7-20-5e, is drilling at 1,945 feet. Consolidated Carbon Co.'s No. 1 White, 445 feet north and 1,782 feet west SE cor. Section 16-20-4e, is being rigged. Easterling and associates' No. 1 Sicard, Section 18-18-4e, is drilling at 710 feet. Six-inch casing was cemented at 2,188 feet at Jordan Drilling Co.'s No. 1 Montgomery, Section 13-18-4e. Ladell and associates' No. 37 fee, Section 10-19-5e, is drilling at 2,183 feet. Ladell Properties' No. 39 fee, 660 feet south and east NW cor. SW Section 1-19-4e, is a derrick. Eight-inch casing was cemented at 905 feet and Natural Gas Products Co.'s No. 1 Burton, Section 26-20-4e, is drilling at 1,200 feet.

Southern Carbon Co.'s No. 5 Ladell, Section 2-19-4e, is drilling rock at 2,119 feet. C. S. Camette's No. 1 Tugwell, Section 21-22-1w, is drilling at 1,195 feet. Natural Gas Products Co.'s No. 1 Trimble, Section 7-20-4e, blew in making an estimated flow of 15,000,000 feet of gas at 2,120 feet and the liner is being set. R. W. Rhodes' No. 1 Hutch, Section 28-23-2w, is shut down at 1,970 feet. Eight and one-fourth inch casing was cemented at 900 feet at Ruston Drilling Co.'s No. 1 Gulley, Section 18-20-4e. Six-inch casing was cemented at 2,072 feet at United Carbon Co.'s No. 1 Raburn, Section 28-21-4e. A derrick is up for Interstate Natural Gas Co.'s No. 1 Parks, 1,980 feet north and 1,966 feet west SE cor. SW Section 23-20-3e.

Webster Parish

Southeast of the Bellevue shallow field, I. J. Laborde's No. 1 Bruner, Section 30-19-10, was dry and abandoned at 537 feet. Humble Oil & Refining Co.'s No. B-5 Davis, Section 23-21-10, is drilling lime at 4,344 feet. Louisiana Oil Refining Corp.'s No. 1 Davis, Section 23-21-10, is drilling lime at 3,925 feet. Ten-inch casing was cemented at 338 feet, and Magnolia Petroleum Co.'s No. A-2 Robbins, Section 21-21-10, is drilling ahead at 406 feet. Northwest Louisiana Gas Co.'s No. 1 Coyle, Section 22-21-10, is being rigged. A bad fishing job is delaying Ohio Oil Co.'s No. 4 Bank of Cotton Valley, Section 22-21-10, at 4,573 feet. Woodley Petroleum Co.'s No. 1 Cox, Section 22-21-10, is drilling lime at 4,190 feet.

ACREAGE WEST OF PECOS RIVER PURCHASED BY MIDWEST REFINING

By Special Correspondent

ARTESIA, N. Mex., March 5.—The Midwest Refining Co. this week purchased the holdings of Robert Rehn, consisting of one small producer and approximately 1,000 acres, west of the Pecos River. The Rehn well is located on the Winans ranch about 1 mile north of the old Brown well, which first attracted the attention of oil men to this section of New Mexico 20 years ago. The well is a small producer, making approximately 4 bbls. a day, coming from a sandy lime from 1,625 to 1,660 feet. The Midwest company has purchased some additional acreage, all of which is fee land, its block now covering 2,000 acres, with the first location on the Terry farm in the SW NW Section 15-18-27. Drilling will be done with rotary tools, as considerable water is encountered in that area, being located in the artesian belt.

In the Artesia Field, Donnelly Brothers of Fort Worth, Tex., have purchased the interest of William Mitchell and associates in the Twin Lakes Oil Co.'s property in the SW Section 28-18-18, consisting of eight producers and modern pumping equipment. The purchase price was figured on a basis of approximately $1,000 a barrel, the lease making close to 100 bbls. daily. It is expected three more wells will be drilled on this property to offset the Maljamar producers to the north.

Pipe Line Runs

Pipe line runs for the State of New Mexico for the week ending February 12 showed the Artesia Field to have made 2,000 bbls., the Rattlesnake structure 1,705 bbls., the Hogback structure 870 bbls., making a total of 4,575 bbls. These production figures will be materially increased for the current month, as the Illinois Pipe Line Co. has opened its 4-inch line to the Maljamar Field in Lea County, and is running the production from the Maljamar lease, where there were 5,000 bbls. in storage. The line has a capacity of 5,000 bbls. daily, and connects with the loading racks at Dayton, 8 miles south of here.

The Prairie Oil & Gas Co.'s No. 1 in the SE SE Section 10-17-31 picked up a flow of salt and sulphur water at 3,853 feet. The hole has filled about 600 feet and the water appears similar to that encountered in the Beeson well in Section 33-17-30, 7 miles southwest. The well will, in all probability, be plugged back, as they have been working in a 6⅝-inch hole. In this event, 13 feet of pay encountered above will be shot.

The Maljamar Oil & Gas Corp.'s No. 1 Grace Mitchell is shut down at 4,203 feet, water having broken in around the 8-inch. This company's No. 1 State, after being cleaned out, flowed a head gauged at 86 bbls. Tools have been moved back on this well, which is in Section 16-17-32, it being the Maljamar company's intentions to drill deeper.

The Ohio Oil Co.'s No. 1 William Mitchell in Section 18-17-32 has drilled through the water sand and is now down 4,175 feet. A rainbow of oil was encountered in the Ingelfield, Bridges' No. 1 State in Section 4-17-34, at a depth of 4,687 feet, the bottom of the hole being 4,700 feet.

The Texas Company has completed rigging up for its No. 1 Johnson test in Section 34-16-31, 2 miles north of the Prairie well.

Making Good Time

Good time is being made on the Ohio Oil Co.'s No. 1 Record in the SW SW Section 13-22-29, drilling at 2,000 feet. The salt in this well was encountered from 320 to 1,720 feet.

The Marland Oil Co.'s No. 1 Hale in Section 11-20-30 is drilling below 300 feet, having cemented 15½-inch casing at 250 feet. The Covert No. 1 in the NW NW Section 15-21-33, is down 1,835 feet, no salt having been encountered. The crew is underreaming a hard water sand, having had 100 feet of this formation.

The Gibson Oil Corp. has made a location in the SW NE Section 29-13-37.

In the Artesia Field, the Ohio Oil Co. has completed another producer, its No. 8 on the Toomie, Allen lease in the SE Section 28-18-18, which was shot from 2,045-85 and 2,125-39 feet with 90 quarts nitroglycerin. A thousand feet of oil was standing in the 8-inch hole a few hours after the shot, and the well will make the usual type pumper for that section.

A large bed of fossils unearthed by a road crew blasting near the Y. O. fault,

(Continued on Page 186)

READING
Genuine Wrought Iron TUBING

READING Tubing made in strict conformity to specifications of the Standardization Committee of the American Petroleum Institute is now available for immediate shipment from the Reading mills, or from stocks of Reading distributors.

Upon request our field representatives will gladly furnish full information regarding A. P. I. tubing.

Now Made to A. P. I. *Specification*

READING Iron Company was the first to manufacture A. P. I. type tubing, and to date has placed several hundred thousand feet in service.

The A. P. I. tubing represents a remarkable advance in the art of pipe making, and members of the Standardization Committee responsible for this development have stated that the general efficiency of this tubing joint far exceeds their fondest expectations.

READING TUBING
GENUINE WROUGHT IRON

World's Largest Manufacturers of Genuine Wrought Iron Pipe

READING IRON COMPANY DALLAS, HOUSTON, TULSA, SHREVEPORT, LOS ANGELES READING, PENNSYLVANIA

Southwest Coastal Area Getting Play

Kingsville 80,000,000-Foot Gasser Now Making Gas and Oil Through Flow Line to Go Deeper

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Mar. 7.—Gulf Coast territory, 50 miles north and south of Corpus Christi, is coming into more prominence each week. In the Kingsville Field, Kleberg County, the Humble Oil & Refining Co.'s No. 3 Flato which came in through 10-inch casing and ran wild, making an estimated 80,000,000 feet of gas and considerable sulphur water, choked itself in after three days and, after replacing the top joint of 10-inch which had been cut by the sand and equipping the well at the surface, the company went back into the hole with an 8-inch wash line and the well is now making gas and oil through the flow line, the bridge having been removed. It is understood to be the company's intention to mud it off at that depth and continue drilling. The depth is 2,250 feet to the bottom.

The presence of the sand there was known but the volume of gas and the pressure was a surprise. The well was designed to test deeper sands. Humble's No. 1 Kleberg trustee, a gas well for some time at 2,129 feet and deepened, tested dry at 2,872 feet. The company is now shooting the well at 1,700 feet and will sidetrack from the 10-inch hole and go down for a deep test. The hole at 2872 feet was too small to permit carrying it down. The Humble is also arranging to deepen its No. 1-B Dennett, which was a good well, one of four in a group at 2,235-78 feet. The Humble seems determined to test out the full resources of the field. The best producing oil sand thus far is that at 2,235-78 feet producing in the No. 1-B Dennett and three offset wells on the north edge of the field.

Completions

In the Southwest Texas territory last week there were a total of 23 completions, of which 10 were oil wells, 2 gas wells and 11 failures. Laredo area and the remainder of Southwest Texas split about even all the way through, each having five oil wells and one gasser, and San Antonio recording five failures and Laredo six.

Laredo District

In the Laredo district, five oil wells added 230 bbls. to the initial production of the field, and one gas well added 40,000,000 feet of gas. The gasser was the Cole Petroleum Co.'s No. 32 Benavides, Block No. 2, Survey No. 15, in the Cole Field in Duval County, completed at a depth of 1,652 feet in the regular sand.

Of the oil wells completed the most important is the Edward St. Albans' No. 1 Puig, practically a wildcat, completed at 1,863 feet, and now on the pump and good for 25 bbls. a day. The well is 11,350 feet from the west line of the Puig Brothers Survey, Alberca de Arriba grant, in the southeast part of Webb County, and is 450 feet from the north line of the Puig Brothers Survey. The production of the Aviator Field is down along the west end of the Puig Brothers Survey, so that this well is approximately 2 miles to the east. This producing spot was really first opened up by the Straight Eight a few weeks ago.

Magnolia Petroleum Co., in the Schott Pool, at the upper end of the Mirando district, completed a 45-gravity well in its No. 7 Garcia, Block 11, Survey No. 592, Webb County, at 1,992 feet estimated at 25 bbls. There are only a few of these high gravity wells in the field, and the regular low gravity oil is about 300 feet shallower.

Sun Oil Co., in the east half of Block No. 45 of the Bruni tracts in the extension of the Aviators Pool, at 1,677 feet completed a 110-bbl. well, the best well of the week. In Jim Hogg County, Magnolia completed No. 25 Martinez, Survey No. 276, at 2,034 feet at the south end of the Henne, Winch & Fariss Pool, estimated at 50 bbls. a day. Grayburg Oil Co., in the Randado Field, Block No. 9, Survey No. 81, completed No. 15 Weil at 1,305 feet, good for 20 bbls.

Abandonments

Abandonments in the Laredo district include the Hazlitt-Simmons No. 1 de la Garza, Survey 335, Block 11, in the Carolina-Texas Field at 2,000 feet, after plugging back to test from 3,021 feet. Alexander et al No. 1 Moglia, in Survey 670, a wildcat several miles east of the Carolina-Texas Field, was abandoned at 3,007 feet. Cresswell-Fallin's No. 1 Gates, in Block No. 1 of Survey No. 17, Webb County, was abandoned at 2,772 feet, a wildcat. Cole Petroleum Co. abandoned its No. 28 Benavides in Block No. 15, Survey No. 13, in the Cole gas field, at 4,102 feet, in proven territory as to shallower sands. Magnolia Petroleum Corp. abandoned its No. 20 de la Garza in Block 7 of Survey No. 291, in the Randado Pool, which tested salt water at 1,302-4 feet. It is on the extreme east edge of the field. Humble-Reiter-Foster abandoned No. 3 Kohler in Survey 144, of Duval County, several miles north of the Cole gas field and in wildcat territory, at 3,014 feet. Humble and Reiter Foster have a program of six tests on this block of 20,000 acres. The first three are failures and the fourth is drilling at 2,286 feet in shale in Survey No. 400, and No. 5 is rigging up in Survey No. 395.

Total operations listed in the Laredo district the past week were 96 and the week before 98.

In the San Antonio district in the Somerset Field, Frontier Oil Co. completed No. 8 Foster, McKinney Survey, at 1,752 feet, flowing 4 bbls. Associated Petroleum Co. completed No. 11 Caruthers, in the Caruthers Survey, at 1,500 feet, pumping 8 bbls.

In the Rockdale Field in Milam County, Groneman Brothers completed No. 1 Chandler, Lorenz tract, at 1,385 feet for 20 bbls., and Rockdale Development Co. completed No. 3 Lorenz, Thompson Survey, at 1,380 feet for 20 bbls.

In the Luling Field in Caldwell County, the Magnolia Petroleum Co. completed No. 16 Alf Mercer at 2,100 feet for 80 bbls.

In Live Oak County, Henderson Coquat completed No. 5 Sartain in the Simmons tracts at 1,297 feet for about 15,000,000 feet of dry gas. This is the second gasser completed in that area in a new producing gas spot. Southern Natural Gas Co. of San Antonio is taking the gas.

Of the abandonments in the San Antonio territory, Johnson Brothers abandoned their No. 3 Trigg in Bastrop County, in James Stewart Survey, Block No. 14, at 1,793 feet without finding serpentine. Ralph R. Lewis abandoned No. 1 Keller in Medina County, in the Andrew Worthington Survey No. 8, at 2,372 feet, and in the Edwards lime. Arkansas Natural Gas Co. abandoned its No. 2 Franklin in McMullen County at 3,000 feet, a few miles north of Tilden, the county seat. Ed Leach abandoned his No. 1 Freeman in San Patricio County, previously reported and which originally came in as a gas well. It has been made into a water well at 500 feet. The Texas Company abandoned its test in Williamson County, east of the town of Shiloh, at 3,200 feet. All of the abandonments in the San Antonio territory were wildcats.

New Sands in Gas Field

In the Refugio gas field, 50 miles north of Corpus Christi, William F. Morgan has picked up a new and interesting sand at 1,375 feet in his No. 1 Rosa Rogers in the forks of the Middle and Blanco Creeks and three-quarters of a mile west of production. When the sand was topped it was a surprise as it was too high for the known sands of the field. It was cored and looked like it had possibilities. Rather than go to the expense of setting casing it was decided to core again and no sooner had the core been taken from the well than it blew in. There was later some water trouble and the well was carried to 1,590 feet where it is on a sand, presumably the 1,600-foot sand of the field to the east. The first sand had good pressure and volume and it looks like it has possibilities. There are now five or six known sands in that field producing gas as there are in the Kingsville Field south of Corpus Christi producing oil and gas. There will be two or three completions in the Refugio Field within a few days.

At Corpus Christi, W. L. Pearson has two gas wells completed east of the old White Point district north of the Nueces Bay and three south of the bay and is starting his No. 1 Meaney south of the bay and will drill several wells on both sides on a contract to supply gas to the Houston Gulf Gas Co.'s line from Houston which now extends to the Refugio gas field but which will be extended south to the Corpus Christi or White Point Field.

Laredo District

Some important deals have been closed in the Laredo territory. O. W. Killam, who discovered the Mirando Field, has bought the lease on 15,000 acres in the southeastern corner of Webb County on land owned by A. M. Bruni. He has checkerboarded it with the Magnolia. It is an important tract. It is about midway between the O'Hern & Seacord Pool on the northeast with the Cole Field immediately north of that and the Henne, Winch & Fariss Pool and the K. & S. extension on the southwest. When the Henne, Winch & Fariss Pool was discovered, it was supposed to be an extension of the Mirando Valley Pool off to the northwest 4 miles. Instead it has extended itself to the northeast right away from the Mirando Valley and is pointed directly to the lately discovered O'Hern & Seacord Pool. They are about 8 miles apart and the Killam purchase is between them.

Recent discoveries and extensions have given the Laredo district a new complexion and throwing in new facts that are furnishing bases for new theories, on the geology of the country. The new situations created seem to call for considerable new wildcatting.

William F. Morgan has closed a deal for purchase of the gas rights on 4,000 acres of leases held by the Gulf Production Co. in the Carolina-Texas gas field in Webb County and the Cole Field in Duval County. The purchase is made for the purpose of developing the gas to fill a contract which Mr. Morgan has to supply gas to the Rio Grande Valley Gas Co.'s pipe line, construction of which is now starting and which will run from the

(Continued on Page 83)

GOOD INDICATIONS ENCOURAGE SOUTHWEST TEXAS WILDCATTERS

By B. D. Stevenson

SAN ANTONIO, Tex., Mar. 7.—Walker-Van Dyun's No. 1 Leigh at Center Point in Kerr County, undoubtedly drilling in Pennsylvania lime, had a slightly better showing of oil last week at 1,600 feet than it had when it tested at 1,485 feet. There is an odor at 1,600 feet which is not ordinarily considered of much importance but in this particular well, which is pure wildcat and above the Balcones fault and in a territory given but little consideration and attention and with no well logs of pioneer wildcatters to go by, it means considerable. The territory is due south of the central mineral region in Mason and Llano Counties. The Pennsylvania sands in that territory are said to be known to carry salt water in some instances and hence there is no reason according to geologists why there should not be accumulations of oil where there are structures. An odor of oil in the Pennsylvania lime in a territory 50 miles square is therefore enough to be worth watching. Pennsylvania was topped at about 680 feet.

Earl B. Reynolds is waiting for tubing to put his No. 2 Butler in Karnes County on the pump at 1,947 feet. Putting it on the pump doesn't mean that it is a well but that he hopes by pumping to coax it into a well. He has swabbed and bailed and worked with the well ever since late in December and is giving the small showing of oil and gas every opportunity to develop into something. There is a possibility that the casing at the lower end is not in as good shape as it should be but he believes the well has a chance to make a small producer at least. As previously stated in other reports the well is 50 miles southeast of San Antonio and is that far from any other production.

Test Maverick County

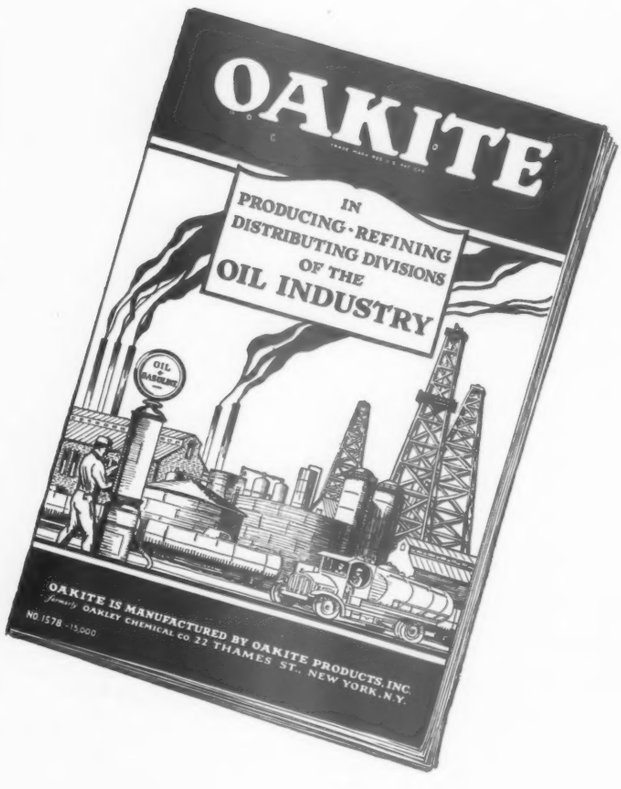
Ryan Consolidated Petroleum Co. has unloaded several carloads of drilling material in Maverick County and will drill three wildcat tests at one time on the Indio ranch of 160,000 acres in the lower part of Maverick County. It will be one of the interesting developments in wildcat work for the reason that the ranch has been approved by a number of geologists and Middle States wildcat tests picked up some pretty good showings of gas and some of oil.

In Zapata County a little south of the Alworth Pool in Jim Hogg County, Buffalo-Erie Syndicate (R. V. Hill) is on a sand at 718 feet and will test. It is believed to be the sand that is producing in the Randado Field at 1,300 feet. In Randado it produces oil. Hill has 5 feet of sand that looks like a gas sand in his No. 3 Martinez, 7 miles south and a little west. The Alworth Pool which has oil in a sand at 1,020 feet is between the two, 5 miles from the Randado and 2 from Hill. It makes an interesting wildcat study and especially will it be interesting if Hill gets a well of any kind.

The wildcat play along this territory has been given some new facts to theorize on the past week when The Texas Company got a 20,000,000-foot gas well in its No. 4 Jennings, 8 miles west of the Randado Field at a trifle below 1,400 feet and a couple of miles north of it Magnolia got 4,000,000 feet at 1,340 feet. Hill's well is about half way between the Randado Pool on the north producing at

(Continued on Page 181)

Get rid of fire risks now!



WHEREVER there is CLEANING to be done in the producing, refining and distributing divisions of the oil industry, you can eliminate or reduce the hazard of fire and explosion by using Oakite materials and methods. *No longer is there need for using dangerous and highly volatile materials like gasoline, naphtha or distillate.*

Oakite is a powerful cleanser used in a water solution. Non-inflammable, safe, effective!

And equally IMPORTANT is the fact that with Oakite materials and methods you can clean BETTER, QUICKER and AT LESS COST than in any other way! *And we are ready to prove this to you.*

Simply ask to have our service man call; or, write for booklet No. 1578. It is the first of its kind ever published and contains information on 63 different kinds of cleaning that are met with every day in the various branches of the oil industry. Sent free on request to every one interested in saving money and finding more efficient ways of cleaning.

Oakite Service Men, cleaning specialists, are located at

Albany, Allentown, Pa., *Atlanta, Ga., Altoona, Pa., Baltimore, *Birmingham, Ala., *Boston, Bridgeport, *Brooklyn, Buffalo, Camden, Charlotte, N. C., *Chicago, *Cincinnati, *Cleveland, *Columbus, O., *Dallas, *Davenport, *Dayton, *Denver, *Des Moines, *Detroit, Erie, Flint, Mich., Fresno, Cal., *Grand Rapids, Harrisburg, Hartford, *Indianapolis, *Jacksonville, Fla., *Kansas City, *Los Angeles, Louisville, Ky., *Milwaukee, *Minneapolis, *Montreal, Newark, Newburgh, N. Y., New Haven, *New York, *Oakland, Cal., *Omaha, Neb., Philadelphia, *Pittsburgh, Portland, Me., *Portland, Ore., Providence, Reading, *Rochester, Rockford, Rock Island, *San Francisco, *Seattle, *St. Louis, South Bend, Ind., Springfield, Ill., Syracuse, *Toledo, *Toronto, *Tulsa, Okla., Utica, *Vancouver, B. C., Williamsport, Pa., Worcester.

*Stocks of Oakite Materials are carried in these cities.

Send for this NEW booklet today!

This 20-page, illustrated booklet should be in the hands of every executive in the producing, refining, and distributing divisions of the oil industry who is interested in LOW COST cleaning. It is based on the practical work of our service men, and contains formulas and information on 63 different kinds of cleaning where money can be saved. On complicated cleaning problems, complete working data including blueprints and specifications on equipment and methods are available.

Oakite is Manufactured only by
OAKITE PRODUCTS, INC.
44C Thames St., NEW YORK
(Formerly OAKLEY CHEMICAL CO.)

OAKITE

TRADE MARK REG. U.S. PAT. OFF.

Industrial Cleaning Materials and Methods

Start Running Oil From Stark Dome

Gulf Pipe Line Co. Completes Connection With Calcasieu Parish Uplift. Prospective Domes Elsewhere

By P. L. McGreal
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Mar. 7.—The estimated gross production of the Gulf Coast division for the month of February is 4,510,666 bbls. compared with 5,269,597 bbls. during January. The estimated gross production for the deep sand section of Spindletop during February was 1,925,336 bbls. against 2,544,250 bbls. during January. These figures would indicate that the deep sand area had reached its zenith and started downward. The pool reached its apex during September with 2,995,570 bbls. The October gross was 2,566,366 bbls. and November gross 2,570,310 bbls. The December gross was 2,817,280 bbls.

The new Stark Dome in Calcasieu Parish, Louisiana, 3 miles north and a little west of the Vinton Pool and southwest of the Edgerly Pool, was given pipe line connections during the week. The Gulf Pipe Line Co. completed a 6-inch line from the pool to Toomy on its trunk line to Port Arthur and started running oil from storage at Stark Dome. The dome is owned jointly by the Gulf Refining Co. of Louisiana and the Standard Oil Co. of Louisiana. The Gulf company is operating on lands of the Lutcher-Moore Lumber Co. and the Standard company on those of the Industrial Lumber Co. The lands of these two companies cover the dome and surrounding territory.

The Gulf Refining Co. brought in the discovery well during the week of January 22 last, being its No. 4 Lutcher-Moore. The initial flow was 2,500 bbls. of 30 gravity oil at 3,400 feet. The well filled available fuel oil tanks and was then shut in for pipe line connections. It is now reported flowing 130 bbls. an hour. The Gulf's No. 5 Lutcher-Moore is drilling around 1,345 feet. The Standard Oil Co. of Louisiana's No. 5 Industrial Lumber Co. went into rock salt two weeks ago at 2,415 feet and was abandoned. The Gulf company has made a location for No. 6 Lutcher-Moore, 550 feet west from No. 4, its producer. The Stark Dome is a geophysical discovery.

Cause No Excitement

These new domes occasion but little excitement, since practically all the acreage on and around the uplift is leased before drilling commences. Hence, there is no opportunity for the small operator or the lease speculator to get within gun shot of the prospect. The only chance the speculator has to exercise his gambling propensities is to buy either all or a part of the royalty interests from the land owner. Even this opportunity is denied in the case of the land on and around the Stark Dome. Both the lumber companies are old and established concerns, controlled by wealthy men.

Here is a list of new domes around which the acreage is held wholly or in part by one or two large corporations. The Nash Pool on the line of Fort Bend and Brazoria Counties, owned by the Rycade Petroleum Co., holding 11,000 acres, one year old. Orchard Dome, Fort Bend County, one year old, owned by the Gulf Production Co., holding 8,000 acres. Sweet Lake Pool in Cameron Parish, opened last October, owned by the Pure Oil Co., one well there. Big Creek Pool, Fort Bend County, 6,000 acres, owned by the Gulf Production Co. The Texas Company has 300 acres in fee simple there. Eagle Point Pool, Iberia Parish, opened in November last, owned by the Union Sulphur Co. and Gulf Refining Co. jointly; one well there. Sulphur Dome, Calcasieu Parish, owned by the Union Sulphur Co. This is the old sulphur deposit. Last December the company drilled one of the old abandoned sulphur wells deeper to 3,416 feet and got a well making 400 bbls., 22 gravity oil. Another of the old wells is now being drilled deeper.

List of Prospects

The following is some of the more prominent prospects around which all the acreage has been leased by the operating companies, thus shutting out prospective competition in the form of offset wells should anything be developed.

Allen and Clemens Domes in the southern part of Brazoria County, held by the Roxana Petroleum Corp.; Hawkins Dome, Matagorda County, held by the Gulf Production Co.; Fannette Dome, Jefferson County, held by the Gulf Production Co.; Moss Bluff, Liberty County, held by the Union Sulphur Co., Gulf and Sun companies; Long Beach, Fort Bend County, held by the Gulf Production Co.; Piedras Pintas Dome in Duval County, held by the Humble Oil & Refining Co. and & Gulf Production Co.; Kingsville, Kleberg County, operated by the Humble Oil & Refining Co.

The use of the seismograph and torsional balance has changed the whole system of leasing in the coastal regions of Texas and Louisiana. The companies using these instruments—and practically all the major companies use them—secure permission from the land owners to make geophysical tests, paying a nominal sum for the privilege. If the explorations are satisfactory, the agreement becomes a lease, providing for bonuses, rentals and royalties just as the usual instrument provides for those clauses.

A few individuals rent instruments for geophysical explorations, lease the land in blocks and then negotiate with some of the major companies to do the development drilling, getting a cash consideration for the leases or retaining an overriding royalty, or both.

Another Dome Located

Another prospective dome has been located by geophysical methods in Chambers County on Old River between the Moss Bluff Dome and the Barber Hill Pool. The Gulf Production Co., Pure Oil Co. and the Humble Oil & Refining Co. had a part in locating the dome, following up geophysical exploration work conducted by the North American Exploration Co. last year. The Gulf company is said to have leased some 1,600 acres, the Humble Oil & Refining Co. 1,200 acres and the Roxana Petroleum Corp. 1,000 acres. Royalty buyers are now dealing with land owners in the vicinity of the prospect. As high as $100 per acre is reported to have been paid for the one-eighth royalty belonging to the land owners.

The Roxana Petroleum Co. set screen in No. 3 Allen Dome in the southern part of Brazoria County and is preparing to bail at 5,356 feet. It is the deepest test there to date.

In Austin County, the Humble Oil & Refining Co. abandoned No. 1 Austin College, Raccoon Creek district, at 1,040 feet. Its No. 1 Bellville bailed dry at 915 feet and will be drilled deeper. A location has been made for No. 2 Austin College. The Raccoon Creek district is a new prospect. The Valley Oil Co. and Harry Pennington drilled five shallow formation tests there. No. 1 Walton blew in as a gasser last month around 1,100 feet and attracted attention to the prospect. The district is about 65 miles inland from the Gulf and opinion is divided as to whether it is a saline dome or a structure. The Humble Oil & Refining Co. joined the other two interests in a large block of leases and is now drilling a series of deep holes. Nos. 2 Reese and 1 Washington are rigging and No. 2 Thompson has spudded in. R. E. Graves' No. 1 Hickory Mound to the northeast set casing at 1,000 feet.

Other Operations

The region between Sealey and Bellville is being explored geophysically with both the seismograph and the torsional balance.

Brazos County—Rassmussen and others' No. 2, near Iola, shut down.

Brazoria County — Stratton Ridge Dome: Gulf Production Co.'s No. 1 Perry on the south flank is below 3,000 feet. Associated Oil Co.'s No. 1 Seaburn on east flank, rigging. Pure Oil-Humphrey Corp.'s No. 1 Armstrong on northeast, spudded in. Clemons Dome: Roxana Petroleum Corp.'s No. 2-A Pabst, drilling at 4,100 feet with heavy rig. No. 4 Clemons below 3,465 feet. Allen Dome: Roxana Petroleum Corp.'s No. 1 Bernard River, deepening from 4,238 feet. No. 1 Reese, drilling at 1,345 feet. Near Danbury: The Texas Company's No. 1 Sweeney, drilling at 1,155 feet. No. 1 Hunt, east of Pledger, drilling at 465 feet.

Jefferson County — Fannette Dome: Gulf Production Co.'s No. 2 Bordages, drilling around 4,400 feet. No. 3 Bordages at 1,546 feet. The Leonard Petroleum Co. of Washington, Pa., has a lease on 3,000 acres in the Pevito Survey. The Miller Drilling Co.'s No. 1 Edwards, near Nederland, is below 2,434 feet. A derrick is up for Edmunds' No. 1 Port, 2 miles northwest of Port Arthur. The Deep Test Oil Co.'s No. 1 McFaddin, 4 miles northeast of Beaumont, is fishing at 1,415 feet.

Matagorda County—Hawkins Dome: Gulf Production Co.'s No. 8 Craig is drilling around 3,870 feet. No. 2 Parkinson is at 1,065 feet, taking a core. No. 2 Sanborn is at 3,709 feet. The Shepherd Mott Oil Co.'s No. 2 Murphy is shut down at 3,154 feet.

Fort Bend County—Long Point Dome: Gulf Production Co.'s No. 1 Wolfe and No. 2 Hausler, rigging. The Gulf company is also drilling Nos. 22 and 23 Davis and 1 Trone.

Harris County—Dr. P. S. Griffith's No. 2 fee, 12 miles north of Houston, drilling at 2,800 feet. Brain and others' No. 1 north of Spring is around 1,825 feet. Same parties have a location south of Tom Ball. The Junitia Oil Co. has a derrick for No. 1 Kitsman, 3 miles north of Cypress.

Liberty County—Moss Bluff Dome: Union Sulphur Co.'s No. 4 Kyle in gyp at 1,009 feet. Barlow and others' No. 1 near Excelsior is shut down. The test near Cleveland is also shut down.

Hardin County—B. Deutser's No. 1 Bevil is a derrick.

Angelina County—Roxana Petroleum Corp.'s No. 1 Long Leaf Lumber Co. lands, is rigging.

Goliad County—Houston Oil Co.'s No.

(Continued on Page 83)

TWENTY-YEAR-OLD ROYALTY CLAUSE BECOMES OPERATIVE AT SPINDLETOP

By P. L. McGreal

BEAUMONT, Tex., Mar. 7.—The gross production in the deep sand area at Spindletop fluctuated widely during the week, getting down to 59,000 bbls. one day. The decline was checked by the completion of two wells that added 4,000 bbls. initial flow to the gross figures.

Gulf Production Co. deepened No. 2 Jack and Duff to 4,900 feet and it came in making 1,500 bbls. It is on the south side. Yount Lee Oil Co.'s No. 18 McFaddin was completed at 3,250 feet, flowing 2,500 bbls. Gulf company's No. 12-A Weed is bailing at 4,700 feet.

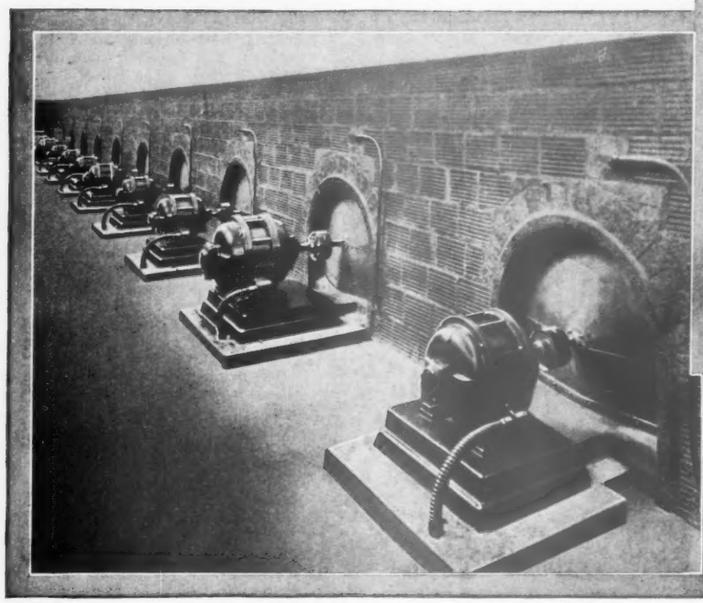
Yount Lee Oil Co. has approximately 41,000 bbls. of the gross output of the pool. The Rio Bravo Oil Co. is credited with 9,000 bbls. and Gulf Production Co. with 7,500 bbls. The balance is scattered, the Magnolia Petroleum Co. having about 2,000 bbls. from its No. 2 fee, completed last week and extending production 600 feet south.

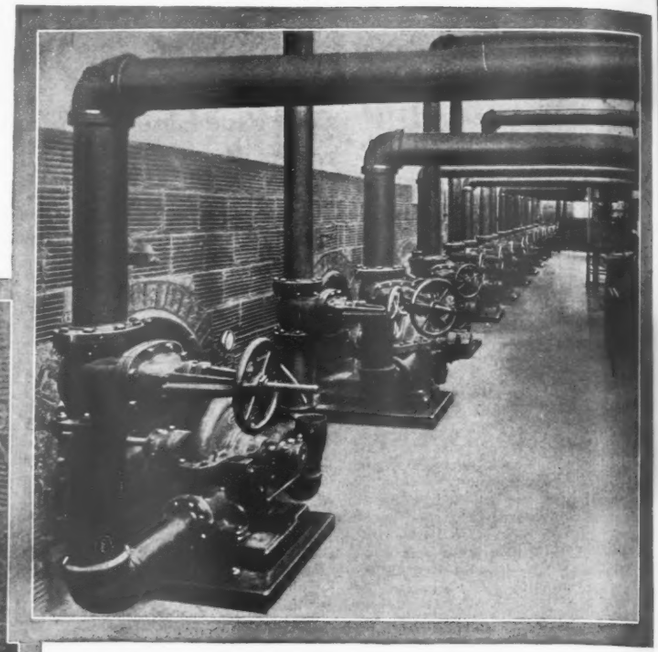
The Magnolia company is rigging No. 3 fee on its tank farm, and has made locations for two more. Gulf Production Co. is offsetting as close as it can with No. 10 Oakwood, 7½ acres to the northwest and the Sun Oil Co. has a derrick up for No. 2 Price, 6 acres to the north of the Magnolia company's line. The success of the Magnolia company in getting a deep sand south of production will probably result in drilling on the east side of the Port Arthur Highway which cuts through the deep sand section from north to south.

The uncertainties of the oil industry were never more aptly illustrated than in the case of the Magnolia company's tank farm, which it owns in fee simple. When the land was purchased years ago from J. J. Hebert no one ever suspected that production would extend out that far from the original cap rock pool. Deep sand production off the flanks of Coastal domes was a dream. The company agreed to pay Herbert 50 per cent royalty on flowing wells and less on pumpers, if oil was ever found on the land. Now, after a lapse of almost 20 years the royalty clause becomes operative and also an obligation to drill three wells.

The Yount Lee Oil Co. is the largest operator in the Spindletop Field, having 14 derricks and rigs. The Atlantic Oil Producing Co.'s No. 1 McLean, is drilling at 4,175 feet; No. 5 standing at 4,325 feet; No. 8 drilling deeper; Nos. 10 and 11 standing; Nos. 16 and 17 derricks. The Deep Sand Oil Co.'s No. 1 Rush, drilling at 3,460 feet. The Hines Oil Co.'s No. 1 Gordon, drilling 4,700 feet; No. 2 derrick; No. 2 Parker, drilling 100 feet. Sun Oil Co.'s No. 2 McLean, drilling 4,475 feet; No. 3 standing; No. 4 4,960 feet; No. 9 400 feet; No. 1 Price, will deepen; No. 2 location. Rio Bravo Oil Co.'s No. 58 T. & N. O. set casing 3,360 feet; No. 101, drilling 2,750 feet. Turnbow Oil Co.'s No. 1 Weed, fishing 5,000 feet; No. 1 Banks, standing 3,075 feet. Plummer Oil Co.'s No. 1 Quinn, derrick. Walker Oil Co.'s No. 1 Quinn, fishing 5,450 feet; No. 1 Tyrrell and No. 2 Weed, derricks. The Magnolia Petroleum Co.'s No. 3 fee, rigging. Kinnear Oil Co.'s No. 1 Gladys, derrick; No. 1 J. O. Davis, drilling 100 feet. Gulf Production Co.'s No. 9 Oakwood, drilling 4,350 feet; No. 10 location; No. 5 Mann, will deepen; No. 6 Jack and Duff, location; No. 7 Roche will deepen; No. 223 Gladys, location.

WORTHINGTON





CENTRIFUGAL PUMPS and driving motors in main pump house of the Eldorado, Kansas, refinery of the Skelly Oil Company. Motors are direct-connected to pumps through hollow-tile fire wall, the shafts being packed where they pass through fire wall.

Motor driven centrifugal pumps — *for loading and transfer service*

THE Skelly Oil Company's refinery at Eldorado, Kansas, has one of the most complete electrically equipped pump houses in the mid-continent district.

The illustrations show a group of seven Worthington Centrifugal Pumps, on one side of the pump house direct-connected to induction motors on the other side of the fire wall. The pumps are used for loading gasoline, kerosene and other light oils and for general transfer pumping of these products. The capacities of the pumps range from 500 to 1500 gal. per min. and they operate at heads varying from eighty-eight to one hundred and ninety feet.

This installation is typical of Worthington's ability to meet every advance in the pumping requirements of the petroleum industry with a type of pump exactly suited to the particular operating conditions and type of power available.

Manufacturers of reciprocating and centrifugal pumps, steam and power driven for every oil field, refinery, pipe line and power-plant requirement.

PUMPS
Steam and Power, Reciprocating and Centrifugal

COMPRESSORS
Air, Gas and Ammonia

CONDENSERS
Surface, Jet, Barometric, Steam Air Ejectors and auxiliaries

ENGINES
Oil and Gas

FEEDWATER HEATERS
Locomotive and Stationary

METERS
Water and Oil

WORTHINGTON PUMP AND MACHINERY CORPORATION
115 BROADWAY, NEW YORK CITY BRANCH OFFICES IN 24 CITIES

6635-4

Deep Sand Test in Pilot Butte Delayed

Shut Down Indefinitely by Legal Entanglements. Thermopolis as Black Oil Refining Center

By F. B. Taylor
Staff Correspondent, Rocky Mountain Area

CASPER, Wyo., Mar. 5.—The expected development of a deep sand pool in the Pilot Butte Field in Fremont County, Wyoming, has been held up by a legal tangle.

The Pilot Butte Oil & Gas Co. drilled a deep test that appeared good for at least 50 bbls. last fall. The firm started another well which had reached 1,020 feet, or about half the depth, when a disagreement among the stockholders resulted in a lawsuit, and the well is now shut down indefinitely.

The Pilot Butte Field has long been considered to have a deep sand pool under the structure that appears on the surface and oil operators regret the Pilot Butte Oil & Gas Co. cannot go ahead with its plans and show what the deep sand holds.

The strike of black oil in the Oregon Basin made by the Ohio Oil Co. is causing considerable interest there. The Ohio is drilling the well deeper to make a test of the Tensleep sand and has found water in the hole. This is believed to be coming from above, however, and a test is now being made.

The recent strike of the Ohio Oil Co. in the Oregon Basin and the Kirby Creek, Lake Creek, Sunshine Basin and other recent strikes of new black oil pools near Thermopolis, has awakened the people of that place to boost the city as a black oil refining point.

Taxation in Northwest

Taxation matters are receiving much attention, both from the oil men and the state legislatures in the Northwest. The new 3-cent gasoline sales tax law passed by the Wyoming legislature went into effect March 1, superceding a 2½-cent tax that has been in effect for several years. The local price of gasoline went up one-half cent to meet the tax, and took a 1-cent drop the next day in line with Chicago tank wagon price. The Colorado legislature has under consideration a 4-cent tax law, which has already passed the House, but is expected to meet with determined opposition in the Senate. The State Highway Department, which will receive all the revenue from the tax, urges that the bill be passed immediately, and a clause providing for its going into effect as soon as passed by both houses and signed by the Governor, was attached but failed to carry. Many senators expressed the opinion that a 3-cent tax would provide sufficient funds. The bill does not exclude gasoline purchased for use in stationary engines and tractors.

Valuation of equipment for tax purposes has become of as much interest to operators in Colorado as it has long been to those of Wyoming. The Midwest Refining Co., Ohio Oil Co., Sinclair Crude Oil Purchasing Co., Producers & Refiners Corp., Prairie Oil & Gas Co. and the Standard Oil Co. of Indiana were unsuccessful in a prolonged effort to secure a reduction in the valuation on drilling equipment, tankage, pipe lines and similar property, a decision having been rendered by the State Board of Equalization following a conference of officials of the companies and assessors of the oil producing counties of Wyoming with the state board. An effort will be made, however, to bring about some degree of uniformity in the assessing in different counties. In Colorado a committee of assessors has reported after investigating oil and gas property values, recommending that "oil and gas leases are assessable at their actual cash value the same as farm lands. That the actual value placed on producing properties should be based on said production, whether assessed as oil and gas leases, mineral reserves, or actual money invested. That derricks, tools, etc., should be assessed as improvements on land."

The Mountain Producers Corp., which includes some of the largest acreage holders in the Salt Creek Field, declared its twenty-sixth regular quarterly dividend this week, increasing the quarterly payment from 60 cents to 65 cents a share. Similar action is expected on the part of the Salt Creek Producers Association, which includes the Midwest Oil Co. and affiliated organizations. The Salt Creek Producers has been paying 62½ cents a share. This company will hold its annual meeting in the near future.

The Circuit Court of Appeals, reviewing the suit brought by the W. S. Barnickel heirs of St. Louis against the Producers & Refiners, affirmed the decision of Judge Kennedy of the Federal Court of Cheyenne in favor of the plaintiffs. Under this ruling, the Barnickels were awarded $300,000 damages for patent infringement.

Oregon Basin

The Ohio Oil Co.'s new producer in the Oregon Basin Field in northern Wyoming was drilled deeper this week, and is showing some water at 3,435 feet. The well, which showed for a 500-bbl. producer of black oil, started considerable excitement in the Oregon Basin area, and the appearance of water in the hole will be a great disappointment if there is sufficient volume to threaten the oil production. A well being drilled by the Ohio company on the Roush permit, 200 or 300 feet from the Sonners well, is being watched with interest.

Two good producers are reported from the Lost Soldier Field in Carbon County. The Prairie Oil & Gas Co. completed its No. 50-A, in Section 10-26-90, and swabbed 669 bbls. in 24 hours. The Utah Oil Refining Co. brought in a 300-bbl. well in Section 2-26-90. On the Mahoney Dome, farther east in the same county, the Hughes Royalty has announced it will deepen its well on the north slope to the Morrison sand, and possibly to the Sundance. The Hughes well, the first drilled on that side of the dome, found very good showings of oil last fall, but has been shut down all winter. The Producers & Refiners is moving three rigs to new locations in the field.

Colorado Operations

In the Colorado fields, interest is being shown in the southeast corner of the state where Paul S. Ache and other oil operators are preparing to extend the recent discovery found across the line into Colorado. In Boulder County, the Frank E. Kistler Oil Co. has a well started in Section 28-2-69 on the Longmont Dome. Mr. Kistler was the founder of the Producers & Refiners Corp.

The Texas Production Co. has a dry hole in Section 15-4-91, in the Moffat Field in northern Colorado, and another in Section 5-6-86, on the Tow Creek Dome.

In the Walden Field, the big discovery well of the Continental Oil Co. is making about 500 bbls. daily through a partly closed valve. The flow of carbonic acid gas and oil is sent into a battery of 500-bbl. tanks until the flow gives indications of freezing up, then the flow is changed over to a second battery while the first tanks are given time to settle. In this way it is possible to obtain a production from the well without it freezing up. The location of the well and tanks makes it possible to run the oil by gravity to the railroad at Walden, where it is put in tank cars and shipped to Glenrock, Wyo., to the Continental Oil Co.'s refinery.

In the Wellington structure of the Fort Collins Field, the Union Oil Co.'s discovery well has caved below the casing and shut off the flow of oil and gas. The well has been used to help supply the gas for Fort Collins and Cheyenne and a derrick and tools will have to be placed to clean out the hole.

The Union Pacific Railroad has superceded two steam trains between Fort Collins and Denver with a gasoline-electric car and trailer. The new car is more or less of an experiment. The car can develop 225 horsepower and haul a 50-ton trailer.

In McKinley County, New Mexico, Section 1-17-9, the Midwest Refining Co. completed a producer good for 240 bbls. in the base of the Mesa Verde formation and while the well is an excellent producer, the company has decided to make a test of the Dakota sand and is now drilling to that sand, depth at present 1,572 feet.

Operations in Utah

The Utah wells are sending in routine reports in the main. The Cane Creek discovery well, No. 1 Frank Shafer, on the Cane Creek Dome, is having some trouble with a fishing job, but is expected to be drilling again shortly. The hole is at 4,976 feet and the cable parted. Fishing tools had to be sent for and are now on the road and no trouble is expected in getting out the lost string.

The John Shafer well, which with the

(Continued on Page 85)

OIL SHOWINGS INCREASE IN WELL, BORDER FIELD, SOUTHERN ALBERTA

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Mar. 7.—In the border fields of Southern Alberta, Urban Oils, Section 4-1-15w4, near Coutts, encountered a small show of oil in the top of the lime at 3,375 feet. At last reports, the test was drilling at 3,392 feet. The oil showing was encountered in a brown, very hard sandstone formation thought to be a cap rock, the oil apparently forcing itself up through this sand from a lower horizon. Some water, about 8 bbls. a day, is also coming into the hole. A swab has been secured, and the well will be bailed dry and a test made of the present showing.

Earlier reports indicated that about 1½ bbls. a day of 25 gravity black crude was being forced up, but as the test was deepened the oil showings steadily increased. The hard sand formation is apparently a stray sand, not met in tests south of the border; whether a cap rock through which the oil is forcing itself or a stray oil sand has not been determined. The drill is now 57 feet in the deep limestone, a horizon hitherto untested in the boundary area of southern Alberta. The location is supposed to be on the northern dip of the Sweetgrass arch.

On Quarantine Reserve

The test is located on the Quarantine Reserve area close to Coutts. The Quarantine Reserve was first tested a few years ago, shortly after the first discoveries in the Kevin-Sunburst Field; the theory being that the Sunburst structure might extend north of the Alberta boundary. About a dozen wells were started at that time, the deepest of these reaching 2,800 feet or more without getting commercial production, but indicating that the Sunburst Field did not extend north of the border.

The present Urban Oils' test was originally started by the J. F. M. Moodie Syndicate of Calgary as the Moodie-Dundas' No. 1. After being shut down a couple of years, it was taken over by Urban Oils, Ltd., largely financed by Pat Burns of Calgary; and a deep test was definitely undertaken. The well was cemented on top of the lime and is now drilling for 4¾-inch casing. If the swabbing test indicates that the drill is in the actual oil sand, a shot may be tried. Stanley Davies of Pearson & Davies, Calgary, is in charge of the drilling, with A. R. Lewis as field superintendent.

East of Coutts, L. C. Stevenson and associates of Great Falls, Mont., are reported to have filed on 2,000 acres in Townships 1-8w4 and 1-9w4, between Coutts and the Rogers Imperial and Erickson Coulee wells, and will do some drilling this season.

To Drill Gas Company Land

Announcement has been made by C. J. Yorath, president of the Canadian Western Natural Gas, Light, Heat & Power Co. of Calgary that, under an option secured some months ago, the Union Oil Co. of Calgary will drill this season on acreage owned by the Canadian Western Co. and Northwestern Utilities, Ltd. The areas concerned are understood to include acreage on the Milk River structure near the Montana boundary, in the Monarch district, north of Cochrane, and in the Viking gas field; and development will be handled by the Union Oil Co. on a royalty basis. The structures were originally discovered by the gas company geologists, and later examined by geologists for the Union Oil Co.

Discussing the projected operations, Mr. Yorath stated that the Union Oil Co. drilling would be concentrated at first on the Milk River structure, southwest of Lethbridge and west of Milk River. Last summer, while carrying on core drill tests for the Canadian Western company, Geologist S. E. Slipper extended his operations to the west of Milk River, where he located what he believed to be the main axis of the Sweetgrass Arch on which, further to the south and west, the Kevin-Sunburst Field is located. The structure was clearly defined, the Canadian Western Natural Gas Co. leasing 15,000 acres, and also securing 9,600 acres to the north from the Canadian Pacific Railroad. The latter lease is conditional on three wells being drilled on the structure this season. These will be deep tests for oil. The acreage likely to be tested is in Townships 2-17w4, 2-18w4 and 4-16w4. Drilling operations will be commenced early this spring. In addition to this work by the Union Oil Co., a test for gas will likely be drilled by the Canadian Western Natural Gas Co. in the Foremost Field this season; though it is pos-

(Continued on Page 190)

Goleta May Not Exceed 15,000 Barrels

Miley Discovery Well Holding Up at 450 Bbls., But May Be Substantially Increased by Drilling Deeper

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Mar. 5.—The Miley Exploration Co.'s wildcat, No. 2 Goleta, which opened California's latest oil field, approximately 12 miles west of Santa Barbara, late last week, is still holding up remarkably well at 450 bbls. daily. This new district is perhaps one of the most important finds of recent years particularly from a production standpoint as the oil is of a superior grade and will command a premium over the highest price schedule now in existence. An analysis of the oil showed it to contain 65 per cent gasoline with a good light lubricating stock and a late centrifuge test indicates a cut of less than one per cent. The potentiality of this new district is still a matter of conjecture since the extent of the structure and presence or absence of further productive horizons has not been definitely ascertained. The field is still in the exploratory stage and, while some are inclined to believe the maximum peak of production in the present zone will not exceed 15,000 bbls. a day at the most, due to a number of reasons, it is too early to venture a definite opinion. The discovery well, which is producing an oil testing 42.9 degrees, was finished at 1,339 feet. It has a penetration in the oil sand of only about 20 feet and since No. 1 Goleta, the original wildcat which is now going ahead at 2,700 feet in search of a deeper horizon, proved up about 50 feet of sand, it is possible the output of No. 2 could be substantially increased by drilling another 10 or 15 feet into the pay.

The importance of this new field, while it will probably not exert any appreciable effect on present production due to the apparent desire to restrict unnecessary work, lies in its possible economic effect on the future gasoline market. The comparative shallow depth at which production was secured, the small cost of development, rapidity of drilling and high quality of oil produced makes the discovery well at Goleta practically the equivalent of a 2,000-bbl. producer in a less favorable area. One of the most interesting features is the low drilling cost as wells can be drilled into production in about three weeks at a cost of not to exceed $15,000. With this oil commanding around $3 per barrel because of its superior quality, a 500-bbl. producer would pay out within two weeks. The discovery well, while it is the largest producer of high-gravity oil in California at present, cannot claim the distinction of producing the highest gravity oil. The General Petroleum's No. 1 Hisey in the Ventura Avenue Field, taken over from the Ventura Associates Oil Co. several months ago, can lay claim to this for it is flowing from 5 to 10 bbls. of 62.8 gravity oil daily. The output however, is exceedingly small. The geology at Goleta was worked out several years ago by Frederick P. Vickery and it was but natural that when E. J. Miley asked for a complete report on the area Vickery was called upon to prepare it. The Miley Exploration Co. has something like 5,000 acres under lease in this district and apparently controls the greater part of the entire structure. The Julian Petroleum and Transcontinental Oil Co., however, should come in for some of this cream and preparations are already being made by these two concerns to test out their respective holdings. This will, of course, force the Miley Exploration interests to protect their acreage by spudding in an offset or two. Production from the discovery well is being shipped out in tank cars and this arrangement will likely be continued pending further developments or at least until such time as some idea can be gained of the field's potentiality.

Seal Beach

Considerable interest is being manifested in the Seal Beach field since the completion of the Pan American's No. 1 Naples in the extreme western part of the district two weeks ago because this outpost opened up a town lot area for development. There are no dwellings in the immediate area to be drilled and for this reason operators will not be unduly hampered, although some of the property to be tested is of a marshy character and will require considerable preliminary work. A visit to the field revealed that locations have been staked for 21 wells in addition to those already under way. Eight new derricks are standing and in each case rotary equipment is being moved in with the utmost speed.

The town lot section adjacent to the Pan American's new producer, which is flowing 2,400 bbls. of 25.6 gravity oil and something like 750,000 feet of exceptionally wet gas daily, is still technically restricted against the drill but an inquiry showed that distributors of steel derricks had booked orders ahead for approximately 50 rigs for early delivery. This indicates work will be pushed as fast as possible as soon as restrictions have been removed. The Long Beach City Council has just adopted an emergency ordinance which will permit the initiation of work in the Alamitos Heights town lot area on Monday, March 7, 1927. Applicants to drill must fill out a prescribed form which will be published for three consecutive days before the City Council grants permission to go ahead. The new ordinance clears up the entire situation and operators will no doubt start a fast race down to the pay. The Pan American and Paul Getty are already setting a fast pace as each has a new well headed downward and rigs going up for three more. The California Petroleum has four tentative locations staked on the Alamitos Land & Water Co. property, while the Richfield has three locations spotted with material on ground for one and a cellar being dug for another. George F. Getty is erecting the rig for his initial test while E. J. Miley is rigging up rotary equipment for two new wells. The Superior Oil Co. has six locations spotted and now that drilling restrictions have been lifted the company will undoubtedly go ahead at once.

Present Operations

The Seal Beach Field, as it stands consists of one producer and a group of drilling projects at various stages in the extreme eastern part of the district and another group of 12 producers and some 15 or 20 drilling wells in the western part. These two groups are approximately a mile apart, the intervening territory being held by the Standard and Marland. The latter, as a result of the feverish activity in the town lot area, contemplates the immediate drilling of five offsets. The acreage on which the Marland will be obliged to drill is of a marshy character and the company has found it necessary to construct a dirt road one-half mile in length to permit distribution of rig material and drilling equipment. Fifteen or twenty trucks are dumping this road material and the company will be in a position to start rig construction and make actual spud in some of the wells within 21 days. This is exceptionally fast work considering the handicap under which the company is working.

With the Marland making preparations to initiate a rather intensive drilling program offsetting the town lot area in the extreme western part of the field, the question arises as to what policy the Standard will pursue in developing its San Gabriel property to the east. The former is undertaking this new work to prevent undue drainage and, while the company, if it follows the usual custom, will drill two lines of offsets, it is hardly likely the Standard will find it obligatory to undertake any considerable amount of new work in the western part of its San Gabriel lease as there will still be a half mile of undrilled acreage intervening.

Nearing Completion

There was only one new well finished

(Continued on Page 182).

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, Well, Location—	S-T-R	Depth	Status
Smith Pet., No. 1 Johnson, Hawthorne	17- 3-14	5,752	testing
General Pet., No. 1 Smith, Potrero	35- 2-14	3,675	sd. sh. drilling
General Pet., No. 1 Guiberson, Potrero	35- 2-14	Mtl.	building rig
Julian Pet., No. 1 Smith, Potrero	35- 2-14	4,820	gr. sd. drilling
Julian Pet., No. 1 DeKoch, Potrero	35- 2-14	Rig	rigging up
Associated, No. 1 Cypress, Potrero	34- 2-14	4,450	cmtd. oil sand
Getty, Geo. F., No. 1 Cypress, Potrero	35- 2-14	Rig	wait. devel.
Getty, Geo. F., No. 2 Cypress, Potrero	34- 2-14	Rig	wait. devel.
Getty, Paul, No. 1 Cypress, Potrero	35- 2-14	Rig	wait. devel.
California Pet., No. 1 Sutton, Poterero	34- 2-14	Rig	wait. devel.
California Pet., No. 1 Toma, Potrero	35- 2-14	Rig	wait. devel.
California Pet., No. 1 Armour, Potrero	35- 2-14	Rig	wait. devel.
Cole, Fred E., No. 1 Cypress, Potrero	35- 2-14	Rig	wait. devel.
Dill Oil Co., No. 1 Cypress, Potrero	35- 2-14	Rig	rigging up
Walker, Fred, No. 1 Cypress, Potrero	35- 2-14	Rig	wait. devel.
Potrero Oil Co., No. 1 Cypress, Potrero	35- 2-14	Rig	wait. devel.
Dominguez Extension, No. 1 Compton, Dominguez	22- 3-13	4,880	sd. sh. drilling
Circle Oil Co., No. 1 Pomeroy, Manchester	22- 3-14	3,358	suspended
Cardiff Oil Co., No. 1 Oceanside, San Diego	24-13- 4	2,070	idle, rain
Petroleum Sec., No. 1 Seaman, San Fernando	14- 2-16	6,000	hd. sd. drilling
Standard, No. 1 University, San Fernando	15- 2-15	5,602	sd. sh. drilling
Standard, No. 1 Austin, Topango	11- 1-17	2,280	hd. sd. drilling
Oceanside Oil Co., No. 1 Pacific, San Diego	23-11- 5	3,210	suspended
Sou. Calif. Drlg. Co., No. 1 Matteson, El Segundo	1- 3-15	4,400	suspended
Petroleum Sec., No. 1 Weston, El Segundo	27- 4-14	Rig	rigging up
Calif. Pet. Dev., No. 1 Spitz, Capistrano	2- 8- 8	4,000	idle, rain
Petroleum Sec., No. 1 DeBaker, Bandini	18- 2-12	5,300	br. sh. drilling
Union, No. 1 Moser, Athens	12- 3-14	5,280	hd. sd. drilling
General Pet., No. 1 Lomita, Sunset Beach	19- 5-11	4,415	hd. sd. drilling
Johnson, Geo. W., No. 1 Wickham, Los Angeles Co.	32- 5-17	2,828	test. show.
Rider, E. R., No. 1 El Segundo, Los Angeles Co.	12- 3-15	2,300	suspended
Clearwater Pet., Well No. 1, Los Angeles Co.	16- 3-12	1,450	suspended
Green, H. M., No. 1 Structure Hole, Los Angeles Co.	27- 1-13	1,400	rigging up
Ackers, C. F., No. 1 Downey, Los Angeles Co.	10- 3-12	340	set pipe

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Associated, No. 1 Smith, Kettleman Hills	12-23-18	2,043	resume drill.
Bolsa Chica, Well No. 1, Kettleman Hills	30-23-19	2,365	suspended
General Pet., No. 1 Burbank, Kettleman Hills	30-23-19	2,730	hd. sd. drilling
C. C. M. O., No. 1 McGlashan, Kettleman Hills	17-24-19	Rig	rigging up
South Coalinga, Well No. 1, Kettleman Hills	35-24-19	2,150	bl. sh. drilling
Ahlburg Gas Co., Well No. 1, Kettleman Hills	7-23-23	Rig	rigging up
Milham Expltn., No. 1 Kettleman, Kings Co.	2-22-17	Mtl.	building rig
Shell, No. 2 Berlywood, Moorpark	32- 3-20	2,001	hd. sd. drilling
California Pet., No. 1 Camarillo, Ventura Co.	...	825	sd. drilling
C. C. M. O., No. 1 Hobson, Ventura Co.	22- 3-24	5,855	cmt. fish
C. C. M. O., No. 1-B Hobson, Ventura Co.	16- 3-24	1,220	bl. sh. drilling
Milham Expltn., No. 1 Sexton, Ventura Co.	19- 3-22	7,100	fishing
Standard, No. 1 Camarillo, Ventura Co.	29- 2-20	4,950	hd. sd. drilling
Standard, No. 1 Montalvo, Ventura Co.	17- 2-22	3,830	gr. sd. drilling
Petroleum Sec., No. 1 Diablo, Ventura Co.	4- 4-18	1,320	idle, rain
Miley Expltn., No. 2-A Casitas, Ventura Co.	7- 3-25	550	hd. sd. drilling
Rio Grande, No. 1 Canet, Ventura Co.	9- 3-23	3,985	sd. sh. drilling
Parkford, E. A., No. 1 Strathern, Ventura Co.	5- 2-18	2,240	sd. sh. drilling
Star Petroleum, No. 1 Canet, Ventura Co.	13- 3-23	3,201	hd. sd. drilling
Richfield, No. 1 Janes, Ventura Co.	16- 5-18	1,640	idle, rain
Richfield, No. 27 Piru, Ventura Co.	35- 5-18	1,480	idle, rain
Superior, No. 1 Pena, Ventura Co.	18- 4-17	2,680	sd. sh. drilling
Milham Expltn., No. 2 Buttonwillow, Kern Co.	8-28-23	3,430	gr. sd. drilling
Gale, H. S., (Gulf), No. 2 Bakersfield, Kern Co.	6-30-28	3,065	hd. sd. drilling
C. C. M. O., No. 1 Quinn, Delano	23-25-27	Rig	rigging up
Union, No. 1 Gill, Famoso	8-28-27	3,281	gr. sd. drilling
Union, No. 1 Colm, Kern Co.	24-28-20	710	testing
Associated, No. 2 Huron, Fresno County	20-19-17	2,506	to abandon
Marland, No. 1 Jacalitos, Fresno Co.	22-21-15	3,418	sd. sh. drilling
Petroleum Sec., No. 1 Anitoz, Monterey Co.	2-22- 9	1,612	hd. sd. drilling
Miley Explts., No. 2 Goleta, Santa Barbara Co.	3- 4-29	1,339	discovery well
Ozena, No. 1 Allensworth, Tulare Co.	26-24-24	1,770	fishing
Grafford, G. W., Well No. 1, Tulare Co.	26-24-24	2,360	hd. sd. drilling
Walklin Pet., No. 1 Emerick, San Luis Obispo Co.	35-27-10	2,470	fishing
Richfield, No. 1 Wreden, San Luis Obispo Co.	10-29-17	Rig	suspended
Shell, No. 1 Cowell, San Mateo Co.	16- 5- 5	1,500	hd. sd. drilling
Shell, No. 1 Murphy, Petaluma	29- 5- 6	4,330	hd. sd. drilling

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

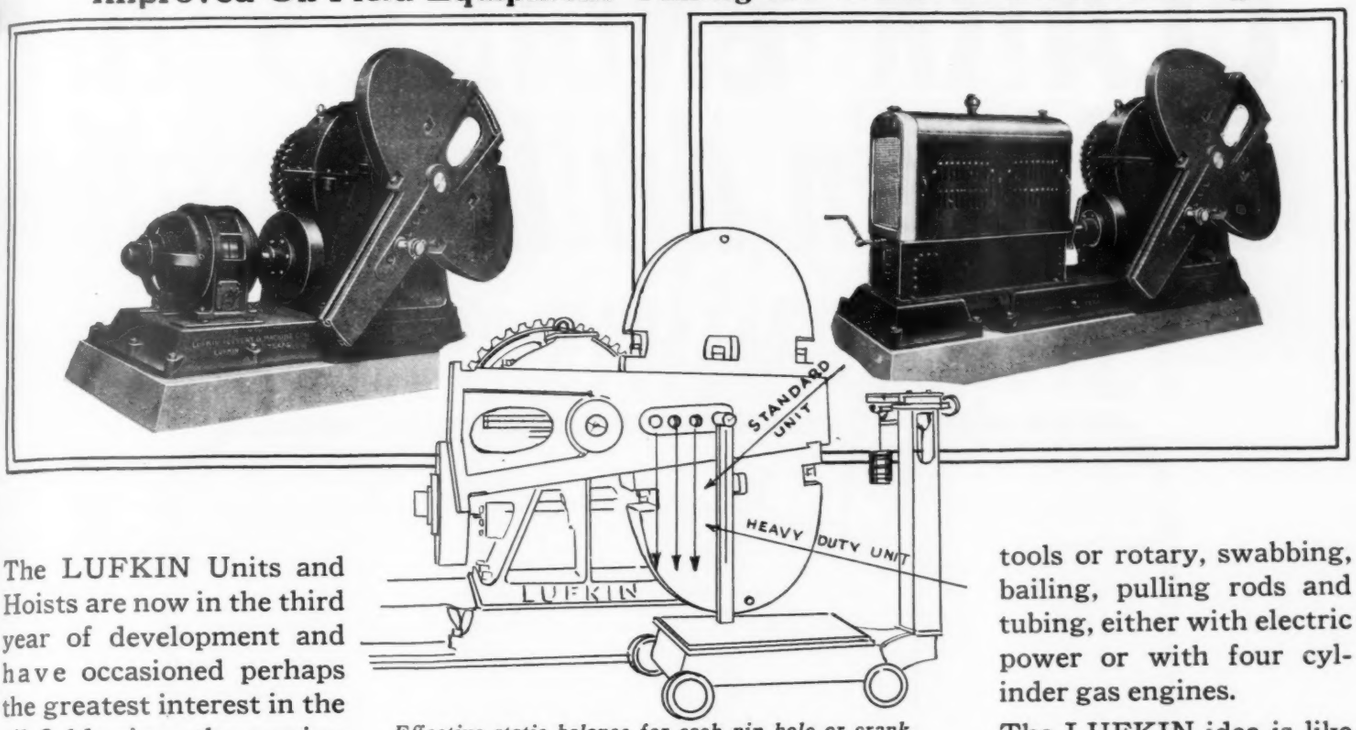
Commodity—	Total This week	Daily Average	Total Last week	Daily Average	This year To date	Same time Last year
Crude oil	323,572	46,225	156,952	22,422	1,162,593	2,431,179
Fuel oil	69,907	9,987	276,561	39,508	1,341,031	1,011,595
Diesel and gas oil	106,445	15,206	.....	.....	518,020	239,896
Gasoline	131,142	18,735	308,016	44,002	1,506,178	718,791
Tops	.....	.....	.....	.....	.....	149,906
Coastwise—						
Crude oil	413,587	59,084	636,209	90,807	4,306,275	3,725,463
Fuel oil	351,480	50,211	158,532	22,647	2,189,741	1,230,820
Diesel and gas oil	.....	.....	5,935	848	19,574	49,763
Gasoline	108,433	15,490	217,104	31,015	1,314,027	983,276
Kerosene	.....	.....	8,098	1,157	31,666	29,815
Tops	.....	.....	.....	.....	.....	29,876
Exports—						
Crude oil	95,031	13,576	.....	.....	489,783	460,614
Fuel oil	405,634	57,948	751,990	107,427	4,061,766	2,335,097
Diesel and gas oil	.....	.....	20,079	2,868	83,906	78,594
Gasoline	88,259	12,608	66,628	9,375	468,384	675,377
Kerosene	.....	.....	.....	.....	281,669	475,520

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	155,371	22,196	.....	.....	251,458	218,036
Gasoline	.....	.....	.....	.....	172,907	267,717
Lubricants	.....	.....	.....	.....	58,110	52,025
Coastwise—						
Fuel oil	187,531	26,790	210,071	30,010	943,342	917,264
Diesel and gas oil	.....	.....	.....	.....	134,308	.....
Gasoline	10,853	1,550	44,982	6,426	539,275	587,828
Kerosene	.....	.....	1,187	170	7,353	53,215
Exports—						
Fuel oil	.....	.....	74,381	10,621	222,042	315,036
Gasoline	134,040	19,149	204,566	29,224	597,960	337,582
Kerosene	73,553	10,508	5,484	783	209,304	332,588
Lubricants	.....	.....	.....	.....	9,120	9,093

LUFKIN

Improved Oil Field Equipment Taking the Place of the Belted Rig



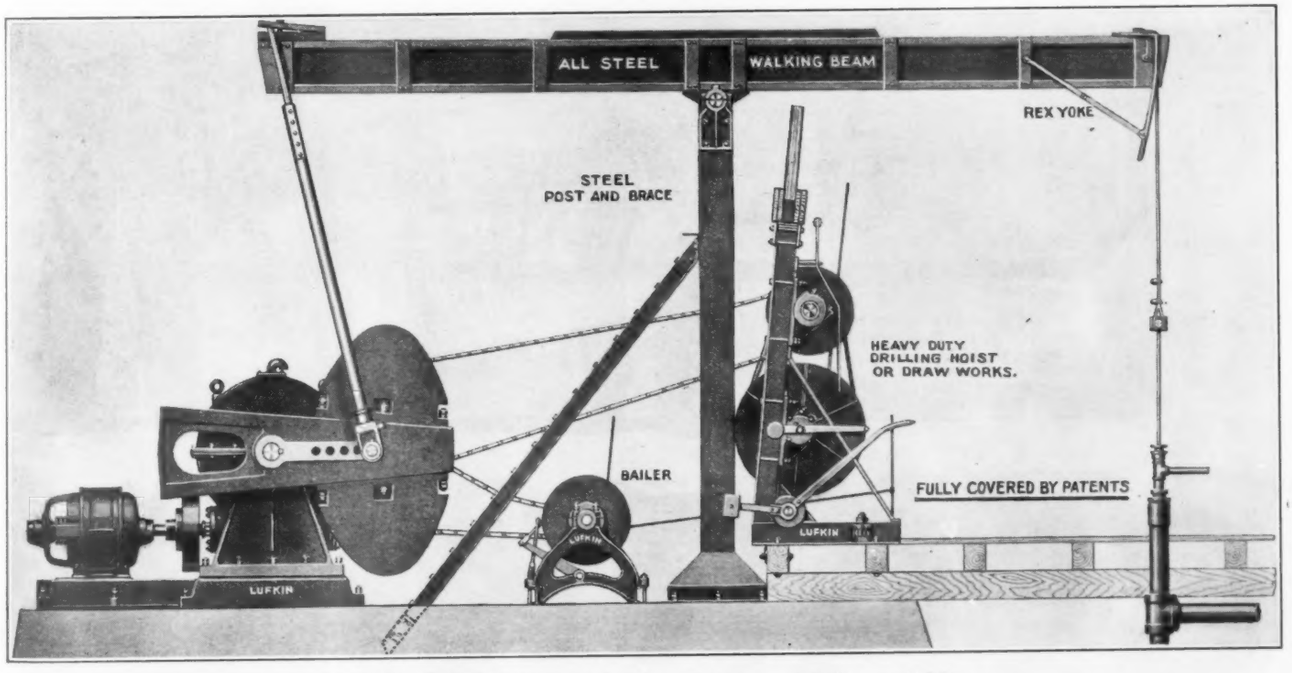
Effective static balance for each pin hole or crank.

The LUFKIN Units and Hoists are now in the third year of development and have occasioned perhaps the greatest interest in the oil fields since the coming of the rotary.

Primarily built and designed for economical pumping with a motor, these units have been developed and extended by the oil operators themselves. Not only pumping but redrilling, either with cable tools or rotary, swabbing, bailing, pulling rods and tubing, either with electric power or with four cylinder gas engines.

The LUFKIN idea is like a locomotive drive—a centrifugal counter-balance, but adjustable to suit well conditions, at the same time to quickly slide the weights to balance the crank itself and act as a fly wheel when working over a well.

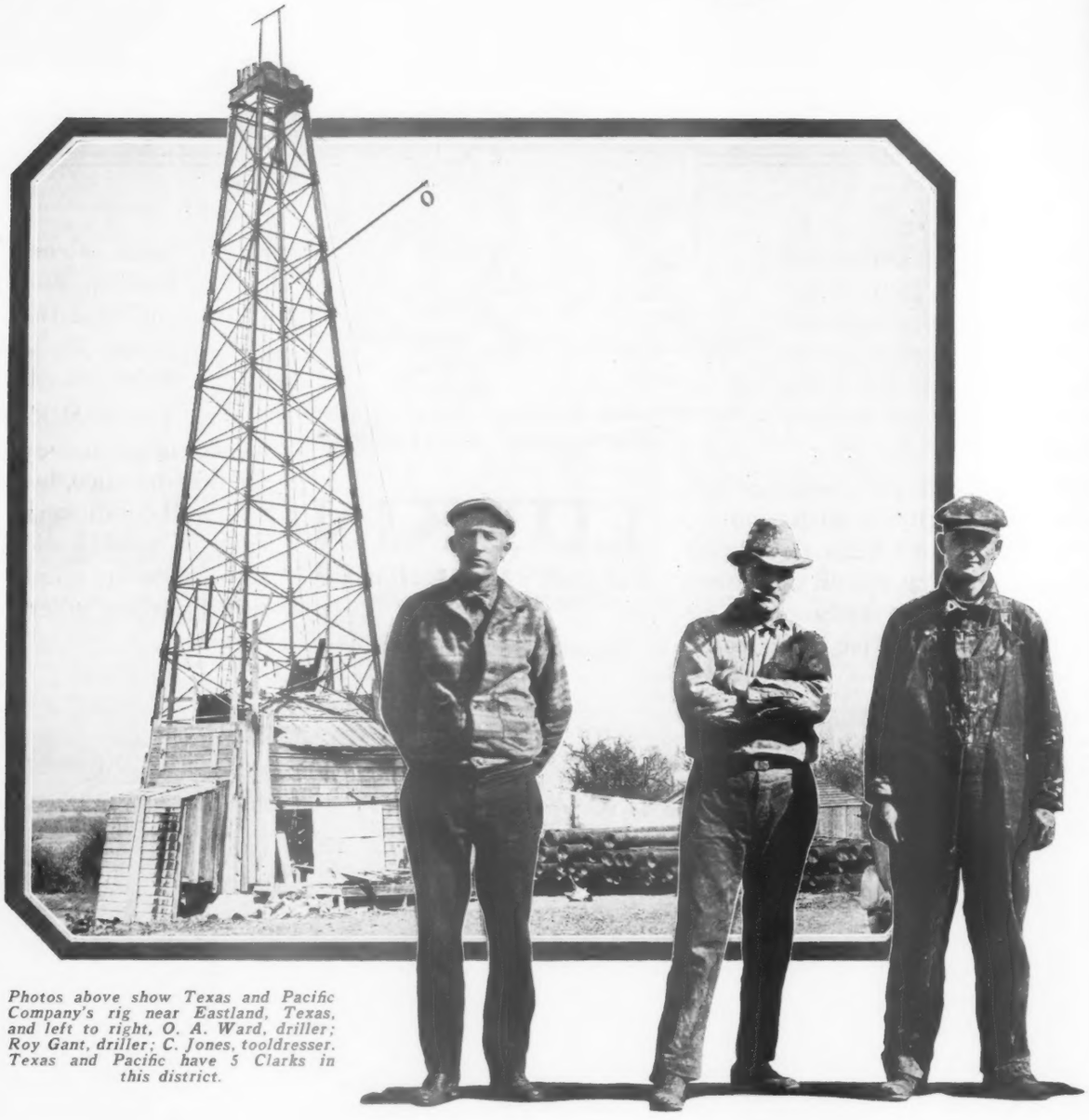
Manufactured at Lufkin Texas
by
LUFKIN
Foundry & Machine Co.
Eldorado, Ark. Tulsa, Okla.
Houston, Texas Los Angeles, Cal.
New York, N.Y.



The LUFKIN WAY—combination Rotary and Cable tool Rig.

TIMKEN BEARINGS ARE USED IN LUFKIN UNITS

CLARK ENGINES are th STEAM in drilling motion an S



Photos above show Texas and Pacific Company's rig near Eastland, Texas, and left to right, O. A. Ward, driller; Roy Gant, driller; C. Jones, tooldresser. Texas and Pacific have 5 Clarks in this district.

CLARK GA

...the nearest things to...and the FURTHEST from STEAM in drilling grief"

Listen to the drillers sing the praise of Clark Engines; hear what the men who use them, year after year, say about their dependability, their economy and their trouble-free operation. What is the answer?

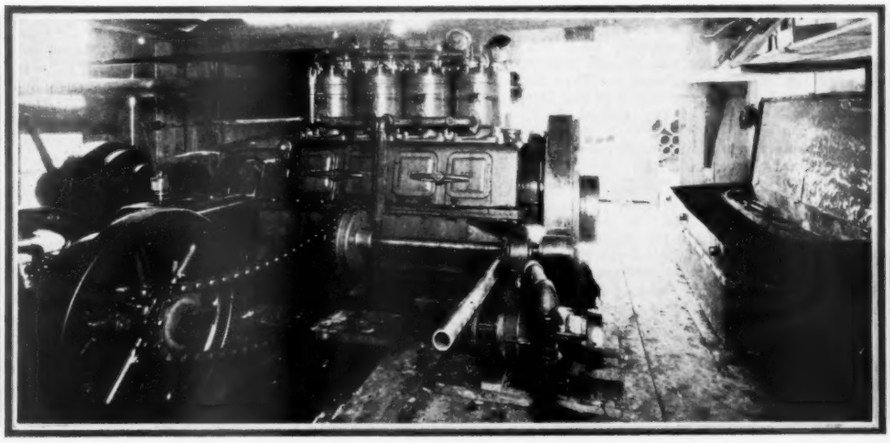
CLARK ENGINES ARE S-L-O-W S-P-E-E-D engines. That accounts for their ideal drilling motion; their longer life; their low upkeep. This slow speed principle is the first thing to consider in buying a drilling engine—because from this principle comes the many advantages that are offered only in the Clark Engine.

The clutch on the Clark Drilling Engine is the only clutch that is supported with TWO bearings, one on each side of the pulley. It is the only clutch that was designed especially for DRILLING ENGINES. Our Clutch is fully covered by patents. It is operated with a floating shaft and is built like a high class automobile—it costs many times more than the ordinary "pumping Engine" clutches which are used in a great majority of other makes of engines; but drillers who have used a Clark Engine say that our clutch is so far ahead of competition as to be outside of comparison. For drilling results use the engine that is designed to give them. For further information address

CLARK BROS. COMPANY
Olean, N. Y.
or

125 West First Street,
Tulsa, Oklahoma
Warehouses at Tulsa, Sweetwater, McCamey, Tex., and Artesia, N. M.

Smith-Booth-Usher Co.
225 E. Central Ave.,
Los Angeles
50 Fremont St.,
San Francisco



...S ENGINES

Southeast Ohio Deep Sand Producers

Holmes County Has 170-Bbl. Producer, Licking County 120 Barrels, Perry County 90 and 75-Barrel Wells

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Mar. 5.—There were fewer completions and the new production was less than the preceding week.

At the present time the most daring wildcatters are at a loss to know where to make the search for new territory that can furnish profitable producers. The only section in the East that promises for the future is the deep sand territory in southeast Ohio. There is still room in a number of counties for a large amount of development work. The gas companies are not so active as a few months ago. The most noticeable falling off is in the lower counties in West Virginia. In Guernsey County, Ohio, they are still very active.

The few fair completions were all located in the deep sand territory in southeast Ohio. In the southwest quarter of Section 23, Hopewell Township, Licking County, the Pure Oil Co. got a producer that placed 120 bbls. to its credit the first 24 hours when it completed and shot a second test on the S. E. Gutridge farm.

In the northwest quarter of Section 19, Perry County, C. C. Hilliard & Co.'s second test on the Samuel Barnes farm produced 90 bbls. the first 24 hours. In the northeast quarter of Section 28, Coal Township, the Chartiers Oil Co.'s No. 203 on the Hocking Valley Products Co.'s property is good for 75 bbls. a day.

In the southwest quarter of Section 18, Green township, Hocking County, the Preston Oil Co.'s No. 3 on the Amanda Linton farm is good for 45 bbls. a day in the Clinton sand.

In Lot 39, Hardy Township, Holmes County, the East Ohio Gas Co. completed and shot in the Clinton sand a test on the Etta J. Nowells farm. It produced 170 bbls. the first 24 hours. This is the largest well completed in a number of weeks.

Washington County.

In the northwest quarter of Section 31, Grandview Township, Washington County, the Morris Oil Co. completed in the Big Injun sand a second test on the James Morris farm. It is a duster. In the same township, the Hope Refining & Construction Co.'s test on the Mary C. Webber farm is good for 3 bbls. a day in the same formation.

In Section 19, Newport Township, Mendenhall & Co. have completed No. 39 on the John Berg farm. It is a very light pumper. In Section 30, Washington Township, Belmont County, the Natural Gas Co. of West Virginia, has an 8-bbl. pumper at No. 5 on the J. F. Bumgardner farm.

Week-End Completions

In rounding out the week of development work the southeast Ohio fields completed dusters. In the northeast quarter of Section 1, Monroe Township, Coshocton County, the Logan Gas Co. completed in the Clinton sand a test on the James A. Markley farm. It is a duster. In Section 29, Alexander Township, Athens County, Cook and others have a duster in the Berea grit at a test on the Julian Gift farm.

West Virginia

On Grass run, Ten Mile district, Harrison County, J. W. Johnson & Son completed through the fourth sand a test on the J. W. Williams farm. It is showing for a 2-bbl. pumper. In McClelland district, Doddridge County, the Carnegie Natural Gas Co. has a gasser on the Ruth Shrade farm.

In Union district, Tyler County, Knowlton & Co.'s test on the T. P. Williamson farm is a gasser in the salt sand. In Liberty district, Marshall County, the Manufacturers Light & Heat Co.'s No. 1 on the Samuel Griffith farm, drilled deeper, is a gasser in the Gordon sand. In Center district, Wetzel County, the Hope Construction & Refining Co.'s No. 7 on the J. A. Riter farm stands full of fluid. In Church district, the Carney Oil & Gas Trust Co.'s test on the Glover Anderson farm is a duster.

Gassers in Roane County

In Walton district, Roane County, the United Fuel Gas Co.'s test on the Robert Cromwell farm is a gasser in the Big Injun sand. In Geary district, the same company has a gasser in the same formation on the A. A. Knight farm.

In Fairmont district, Marion County, the Owens Bottle & Machine Co. drilled a test on the Asby Rice farm through the fifth sand and found nothing in that formation. It is a small gasser in the Gantz sand. In the same district, the same company's test on the B. Amos farm is dry in all sands. In Union district, Pleasants County, the Wiser Oil Co. and others completed a test on the Thomas Gramblett farm. It is showing for a light pumper in the Maxon sand.

Boone County Gassers

The Pure Oil Co. has completed Nos. 14 and 15 on the Federal Coal Co.'s tract, in Sherman district, Boone County. Both are fair gassers. In Peytonia district, the Owens Bottle & Machine Co. has a gasser at No. 32 on the Coal River Mining Co.'s tract. In Scott district, the United Fuel Gas Co.'s No. 2 on the Horse Creek Coal & Land Co.'s tract is a gasser in the Big Injun sand good for 375,000 feet.

In Poe district, Hancock County, F. L. Freshwater completed his No. 6 on the John Herron farm, a light pumper in the Berea grit. In Union district, Clay County, the Empire Petroleum Co. completed in the Big Injun sand No. 4 on the W. D. Samles farm, a fair gasser.

On Doctors Creek, Big Sandy district, Kanawha County, the Virginian Gasoline & Oil Co. gave its old No. 1 on the John Cromwell farm a shot in the Weir sand and increased its production from almost nothing to 2 bbls. a day. On Big Creek, same district, Peter Silman shot No. 3 on the Meadows-Michael farm in the same formation with the same result.

On Meathouse Fork, New Milton district, Doddridge County, West Virginia, the Carnegie Natural Gas Co. completed in the Big Injun sand No. 3 on the George Ahouse farm. It is a very light gassers. In McKim district, Pleasants County, Rexroad & Davis drilled their test on the C. N. Steel farm through the Squaw sand and dry in all formations. It is a fair gasser.

Roane County

On Seaman Fork, Reedy district, Roane County, the Heck Oil Co. completed in the Berea grit No. 8 on the J. W. Conley farm, good for 5 bbls. a day and the location is 1,500 feet northeast of No. 4 on the same farm. In Spencer district, the Federal Oil Co.'s No. 36 on the Provident Mining Co.'s tract is good for 8 bbls. a day in the salt sand. In Geary district, the United Fuel Gas Co.'s test on the I. P. Smith farm is a gasser in the Big Injun sand.

In Grant district, Pleasants County, Swingle Brothers' test on the S. J. Sharp farm is dry and abandoned. In Jefferson district, Rinehart & Co.'s test on the Peter Newland farm is a gasser in the Big Injun sand.

Braxton County

In Otter district, Braxton County, the West Virginia Central Gas Co.'s first and second tests on the W. N. Cutlip farm are gassers in the Big Injun sand. In the same district, H. C. Zogg & Co.'s tests on the Lee Belknap and W. N. Cutlip farms are both gassers. In the same district, C. F. Engle has a gasser in the Maxon sand at a test on the D. S. & C. F. Engle farm. In Murphy district, Ritchie County, the Hope Natural Co. has a gasser in the Big Injun sand at a test on the D. M. Miller farm.

On the head waters of Two Mile Creek, Grant district, Cabell County, the Aetna Oil & Gas Co. completed and shot in the Berea grit a test on the W. H. Thornburg farm. It is a gasser. On the same stream and same district, 3,000 feet north of the last-named well, the same company has the rig completed for a test on the L. H. Moore farm.

On Pharo run, PawPaw district, Marion County, the Owens Bottle & Machine Co.'s test on the John Rice farm is through the fifth sand and dry. It is a light gasser in the Gantz sand. In Fairmont district, same county, on Finchs Run, the Bell & Gas Co.'s test on the Marcellia Barrickman farm is a gasser in the gas sand good for 1,500,000 feet.

Kanawha County

On Gabe Run, Big Sandy district, Kanawha County, the United Fuel Gas Co. completed in the Big Injun sand a

(Continued on Page 166)

FOUR COMPLETIONS IN SAGINAW; SEVERAL WELLS NEARING THE PAY

By Whit

SAGINAW, Mich., March 4.—The heavy blizzard that struck the Saginaw Field delayed operations to some extent and four completions were reported for the week, with several due to reach the pay sand within a few days, barring no bad luck.

The 32-cent cut in the price of Saginaw crude oil may have the effect of slowing down development of the field, according to intimations of some local operators. Though some companies plan to continue drilling unabated, others are reported to be considering some curtailment for the present, though no definite announcements have been made on this point. The cut announced by the Sun Oil Co. and the National Refining Co., purchasers of the crude from the Saginaw Field, brings the price to $2.03 a barrel. It is the second cut within about 60 days, there having been a 60-cent drop last November.

New Completions

The Saginaw Prospecting Co.'s No. 1 on the Kline, Fox and others' property, at Hermansau Road and the Pere Marquette Railroad, struck top of the Berea sand at 1,804 feet and drilled 20 feet in the sand, shooting with 80 quarts brought forth what shows for a 20-bbl. initial producer.

The Sun Oil Co.'s second well on the Dr. D. E. Bradshaw farm, in the south half of the south half of the northeast quarter of Section 10, Saginaw Township, Saginaw County, on the Bay Road, one-half mile north of the Shattuck Road and 705 feet west of No. 2 same farm, shows for a 10-bbl. producer. Top of sand was at 1,842 feet and drilled 15 feet in the sand.

Cross Petroleum Co.'s No. 1 on the Arthur Baumler property at Hermansau and Ash Streets reached top of sand at 1,810 feet and at 18 feet in the sand, put in an 80-quart shot, resulting in a 20-bbl. showing.

Fordney Petroleum Co.'s No. 1 at Michigan Avenue and Weiss Street, hit top of sand at 1,810 feet and went 19 feet in the sand, shooting with 80 quarts, the well making a 20-bbl. showing, about the same as all wells drilled within the defined limits of the field.

Three wells are due for completion at most any time and several others within a few days drilling to reach the pay sand. Fordney Petroleum Co.'s No. 1 on the Nelson-Nowak property on the west side of Durand Street, near Reed Street; the Sun Oil Co.'s No. 6 on the Schoenteit farm, Section 11, Saginaw Township, and the Saginaw Prospecting Co.'s No. 1 on the Nicholas Pappas property on the Hermansau Road.

Saginaw Field Notes

The Sun Oil Co. has staked out five new locations, some of which are very important as to location, being to the northwest of the present good production. Among them are the No. 2 location on the Louis Voight 56-acre farm, in the west half of the southeast quarter of Section 10, Saginaw Township, east of the Fred Engle farm, where the Bliss Petroleum Co. has a light producer and south of the Doctor Bradshaw farm; No. 3 location made on the Doctor Bradshaw farm; No. 1 on the George Kuch 20 acres west of the Bradshaw farm, an east offset to the Ohio Fuel Corp.'s well on the M. Laundra farm, northwest quarter of Section 10; No. 1 on the William Seidele 40 acres, in the same quarter section and north of the Kuch and Laundra farms, which will be a very important test for a northwest extension and another on the Henry Deibel 20 acres, in the south half of the northwest quarter of the northwest quarter of Section 10, the farthest test so far to be made in a northwest direction from production. Same company has also made a location for No. 7 on the John Schoenteit farm, Section 11.

Operations are getting under way for another well in the Birch Run district to be drilled by J. F. Marchard on property of Patrick Sauve in Section 19, Birch Run Township, Saginaw County, along the Pere Marquette line about a mile north of the town of Birch Run. In that same area it is reported that the new casing has been set in the Blackmar well of the Bacon Petroleum Co., the old casing being damaged by the shooting of the well some time ago, apparently having been removed, according to representatives of the company.

K. & M. Oil Co. is starting a new well on the George Bishop property, at Clark and Carrollton Streets. Spudding has commenced.

The first dividend to be paid by any company in the Saginaw Field was announced by officials of the Saval Development Co., which will pay a 2 per cent cash dividend on March 31. This company has just let the contract for the drilling of a well on the Cuthbertson property on Bay Road, north of the Shattuck Road and between the Kruska well of the Saginaw Prospecting Co., and the Doctor Bradshaw wells of the Sun Oil Co.

James Cooper has started work on a new well on a community lease near Eddy and Ash Streets.

CASING

DURING 1926 THE OIL INDUSTRY PURCHASED 900,000 -GROSS TONS- OF CASING

Can You afford NOT to Protect this enormous investment?

During 1926 the Oil Industry used more casing than any other year in its history. Nine hundred thousand gross tons for drilling wells exclusively, were purchased. This does not include pipe lines and other uses.

According to Mr. B. E. V. Luty, writing in The Oil and Gas Journal of February 17th: "The amount of casing per well has been increasing in recent years, as the newer fields run the deeper and in the older fields there is deeper drilling than formerly. As to the amount of steel required per well drilled, there is no typical well. The average weight of casing per foot increases rapidly as the depth increases. Oklahoma and Texas wells may run 3,000 or 4,000 feet or more. Estimating the amount of steel used per well is further complicated by the fact that much steel is used that does not stay in the well, temporary casing being pulled as the driller proceeds, such casing being used over and over again, indefinitely. The majority of wells drilled in 1926 probably took in permanent equipment from 35 to 50 gross tons apiece in casing, tubing, etc."

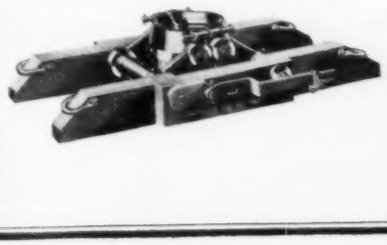
These facts point to two things, primarily, which are CHANGING DRILLING PRACTICE in the Oil Industry: 1. DEEPER WELLS and, 2. MORE CASING PER WELL DRILLED. In other words, deeper wells mean costlier wells.

It is a significant fact that the increased use of casing has developed an increased demand for BOVAIRD GRIP CASING SPIDERS. For casing is pulled and run oftener now than several years ago when shallow wells were the rule rather than the exception. And Bovaird Casing Spiders are being depended upon now, more than ever, to save time, money and labor, with absolute safety, in running and pulling casing. Bovaird Spiders save fully 25% of the time consumed on casing jobs with old style spiders, or rings and wedges.

In pulling casing the spider acts automatically, the casing moving freely at all times, in an upward direction, even in passing couplings. But the casing is INSTANTLY gripped when it starts downward.

In running casing the jaws are locked open in order to let the casing and couplings pass freely. When it is desired to hold the casing in the spider, the spring latch on the handle is released and the jaws and slips fall against the casing and hold it at the point desired.

BOVAIRD CASING SPIDER



Central West Has Few Good Producers

Holmes County, Ohio, Gets 65-Bbl. Well; Indiana 50 and 40-Bbl. Producers, and Illinois 37 Bbls.

By Whit
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Mar. 5.—Little was accomplished by the drill in the Central West Field for the week due to bad weather, many of the drilling wells in all divisions being shut down awaiting better footing. In the Lima Field only strippers were drilled in. In Central Ohio a 65-bbl. producer was drilled on the Scott V. Mast 23 acres, Section 16, Perry Township, Holmes County, while four wells were completed in Wayne County, three being dry and the other a fairly good gas well. Illinois had one good shallow sand well on the James Rush farm, Casey Township, Clark County, with 37 bbls. initial from 600 feet. In the Trenton Rock area of eastern Indiana, a 40-bbl. well was found in No. 3 on the Joe Peel farm, Jefferson Township, Wabash County, and in the southwestern part of the state in Center Township, Gibson County, a 50-bbl. natural producer was struck on the Margaret Hollingsworth farm.

Lima Field

Small producers were the result of the drill in the old Lima Field of northwestern Ohio. Few new rigs are springing up in any section as it is out of the question to move rig material or drilling machines over the farm lands from one location to another.

Near Cygnet, in Bloom Township, Wood County, the Ohio Oil Co. drilled No. 47 well, 200 feet from the north line and 600 feet from the east line of the E. Shanaberger farm, in the northwest quarter of Section 7 to a depth of 460 feet in the Trenton, a heavy dose of salt water being found. An attempt will be made to exhaust the water and if that can be done it may mean a good producer. Top of sand in this well was found at 1,161 feet and total depth of hole is 1,621 feet. In Troy Township, same county, G. H. Blausey's No. 6 well, 800 feet from the south line and 400 from the east line of the J. F. Haar farm, in the northeast quarter of Section 36, tapped sand at 1,252 feet and drilled 32 feet in, getting a 5-bbl. pumper.

In Perrysburg Township, Wood County, the Oko Oil and Gas Co.'s. No. 7 well, 885 feet from the north line and 30 from the east line of the Alexander Beard farm, in the northwest quarter of Section 7, pumped 7 barrels. Top of sand was at 1,236 feet and sent to a total depth of 1,281 feet, or 45 feet in the sand. In Montgomery Township, Hollis C. Carsten abandoned Nos. 1, 2, 3 and 4 on his own farm, Section 24. In Liberty Township, Mattie S. Rouse and others are starting No. 23 on the Eli Stockwell farm, Section 2, and Walden & Evans are drilling No. 2 on the Orpha J. Walden farm, Section 9. In Perrysburg Township, the Oko Oil and Gas Co. is drilling No. 9 Lindermier farm, Section 28. In Webster Township, John Geldin and others shot No. 5 on the Charles Geldin farm, Section 22, the shot spoiling the hole and No. 6 is now drilling.

Auglaize County

In Washington Township, Auglaize County, Graver Lynch and others are drilling a test on the William Wibber farm, Section 9, and the Brookside Oil and Gas Co. is drilling No. 4 on the H. O. Kock farm.

In Woodville Township, Sandusky County, Louis Hille drilled in a 5-bbl. pumper at No. 4 well, 1,400 feet from the north line and 100 from the west line of his own farm, Section 1. Sand was topped at 1,214 feet and drilled 18 feet in.

The June Oil Co.'s No. 1, on the M. Hellworth farm, Section 28, Hopewell Township, Mercer County, was good for only 1 bbl. the first 24 hours. In Center Township, R. C. Grace drilled in No. 2 on the Dayton Fast farm, in the southwest quarter of Section 4, for a 5-bbl. pumper. Top of sand was at 1,120 feet and total depth 1,166 feet. In Union Tonwship, same county, Stelzer & McClure abandoned No. 1 on the James Clover farm, Section 16. Michael J. Haley and others did the same with No. 1 Lavina Winger farm and No. 8 Darrell Davis farm, Section 16.

In Cynthian Township, Shelby County, the Ohio Oil Co. is drilling No. 5 on the Theresa Goffen farm, Section 34, and the Elierman Oil Co. is drilling a second test on the N. A. Paulus farm, same section. In McLean Township, the Shelby Oil and Gas Co. is drilling No. 4 on the H. Ernst farm, Section 9.

In the Roundhead Field of McDonel Township, Hardin County, the Hardin Oil and Gas Co. has a rig in for No. 9 on the A. R. Zimmerman farm.

Illinois

High water prevails over many parts of the Illinois Field prohibiting field work to a great extent, especially in the Wabash County area, where the Wabash River and its tributaries do much damage yearly.

In the Casey Field, in Casey Township, Clark County, W. C. McBride Inc. drilled in No. 27 well, 1,800 feet from the north line and 1,000 from the west line of the James Rush farm, in the northeast quarter of Section 26, the well producing 37 bbls. the first 24 hours from a depth of 600 feet. D. C. Davis' No. 22 well, 600 feet from the north line and 400 from the east line of the A. F. Lennex farm, in the northwest quarter of Section 23, pumped 4 bbls. initial from a depth of 602 feet.

In Montgomery Township, Crawford County, the American Oil Development Co.'s No. 6 well, 200 feet from the south line and 600 from the east line of the L. N. Tohill farm, in the northeast quarter of Section 9, pumped 6 bbls. from a depth of 976 feet.

The Ohio Oil Co. is drilling No. 8 on the Charles Gillin farm, Section 30, Bond Township, Lawrence County, between the Lawrence and Crawford County Fields.

H. D. Barker and others are drilling a test on the J. S. Baker farm, Section 13, Martin Township, Crawford County.

Indiana

The best completion in the Indiana Field reported of late is Mann & Huber's second test, 790 feet from the north line and 200 from the east line of the Margaret Hollingsworth farm, in the southeast quarter of Section 13, Township, Gibson County. Top of sand was found at 1,394 feet and at 13 feet in the sand, showed an initial production of 50 bbls. natural the first 24 hours. In Barton Township, same county, Bell Brothers second test on the John Mahahan farm, Section 10, was a dry hole at 1,107 feet, making two dusters for this tract.

In Monroe Township, Pike County, the Gem Oil Corp's. No. 5 on the George A. Taylor farm, Section 9, produced 500,000 feet of gas at 781 feet.

In Jefferson Township, Adams County, in an extension to the Berne Field, McKelvey and others' No. 3 on the Joe M. Peel 80 acres, Section 6, is a 40-bbl. initial producer. In Wabash Township, Russell and others' test on the A. Adair farm, Section 32, was a dry hole.

In Penn Township, Jay County, Ridenour and others are drilling a test on the A. C. Brown farm, Section 33, and in Bear Creek Township, Russell P. Ridenour, Trustee, has a rig in for No. 3 C. Brinkerhoff farm, Section 21.

In Prairie Creek Township, Vigo County, near Middleton, the Ohio Oil Co. is drilling a test on the James A. Stout farm, Section 26. This is north of the recent well drilled by the Siosi Oil Co., across the line in Fairbanks Township, Sullivan County.

Central Ohio

Six completions were reported from the Central Ohio Field and new locations were few as were new drilling wells. The best oil completion reported, is the Logan Gas Co.'s No. 3 in the southwest corner of the Scott V. Mast 23 acres, Section 16, Prairie Township, Holmes County, with an initial 24-hour output of 65 bbls.

In Litchfield Township, Medina County, the Ohio Fuel Supply Co.'s test in the southwest corner of the L. A. Severcool farm, in the southwest quarter of Lot 1, produced only 1 bbl. of oil in 24 hours from a depth of 325 feet.

In Congress Township, Wayne County, Glen Harmon and others brought in a nice gas well at a second test on the C. W. Keener 155 acres, Section 31. In Chester Township, the Kemrow Oil Co.'s test in the northeast corner of the P. Firestone 133 acres, Section 24, goes down in the duster list. In Paint Township, the Logan Gas Co. landed one of the same kind at a test 600 feet from the south line and 1,393 feet from the east line of the Pauline B. Becker 66 acres, Section 9, and in Chippewa Township, same county, Westheiffer & Winger failed to find either oil or gas in commercial quantities in a second test in the southwest corner of the H. C. Hollinger 40 acres, Section 29.

In the Cleveland Field in Dover Township, Cuyahoga County, the Logan Gas Co. is drilling No. 1 on the H. L. Rutherford farm, Lot 37. In Kilbuck Township, Holmes County, the Kemrow Co. is drilling a second test in the northwest corner of the Albert C. Fites 87-acre farm, Lot 40, and the East Ohio Gas Co. made a location for a second test in the northwest corner of the C. P. and L. Allison 40-acre farm, in the southwest quarter of Lot 12. Same company made a location for a test in the southwest corner of the John Bauman 170-acre farm, Section 21, Milton Township, Wayne County.

In Sullivan Township, Ashland County, the Logan Gas Co. is drilling No. 1 W. J. Harvinot farm, Lot 81, and in Section 4, Jefferson Township, Knox County, the East Ohio Gas Co. is drilling No. 1 on the C. F. Stout 80 acres, Section 4.

AMBROSE POOL MOST PROMISING IN WESTERN KENTUCKY DIVISION

By Whit
Staff Correspondent, Kentucky-Tennessee

GLASGOW, Ky., Mar. 7.—Features were few in the Kentucky-Tennessee and Southern Fields, the only wells of note being found in the Ambrose Pool, several miles north of Hartford and about 12 miles south from Whitesville, in Ohio County, opened some months ago by the Ohio Oil Co. This appears to be the richest spot now being developed in the western Kentucky division. Two exceptionally good producers just found in the pool, along with several others during the past few months, are bound to bring about a very active drilling campaign as soon as the weather settles. The two good producers were No. 3 on the Ambrose heirs' 14 acres, with an initial production of 150 bbls., and No. 5, on the John R. Weller 110 acres, also a 150-bbl. initial producer. The latter lease is owned by a native Kentuckian, who embarked in the oil game only a few months ago and since then has drilled in five producing wells on the Weller lease, all being above 100 bbls., one or two starting better than 300 bbls., which is quite a record.

The recent completion of a 30-bbl. producer on the I. L. Bartley farm, some distance southwest of the good wells on the Weller lease, makes that territory look inviting. Some good wells have been found to the north of the Weller lease on the Ambrose properties, while a short distance or a lolation to the east of the No. 1 Weller well, a dry hole was completed some time ago on the Ellis farm, which looks as though there may be a dry streak between the two good producing leases. A dry hole was also found on the Scott Ambrose farm to the north, but since then a producer has been found along the south line of the farm west of the dry hole, while to the east on the Ambrose heirs' farm are some good producers.

The outlook for a heavy drilling campaign in several counties in Tennessee along the Kentucky State line, in Macon, Clay, Overton, Fentress, Pickett, Scott, Jackson, Morgan, Putnam and possibly Cumberland County. Much leasing has been done further south of these counties as far as the south line of the State.

Just now there is a little excitement in a leasing way in Mississippi due to the completion a few months ago of the good gas well on the Carter farm, in Monroe County, near Amory. A number of new locations are staked out for tests in this county as well as in a dozen other counties.

Week's Work

A summary of the week's work in the Kentucky-Tennessee fields show 25 completions, 17 producers with an initial production of 419 bbls., 7 dry holes and 1 gas well. When compared with the previous week there were 2 more completions, 3 less producers, 32 bbls., more production, 4 more dry holes and 1 more gas well. The wells were distributed by counties and districts as follows:

County—	Comp.	Oil Wells	Prod.	Dry	Gas
Barren	6	5	27	1	0
Ohio	5	3	340	2	0
Johnson-Magoffin	5	4	17	1	0
Warren	2	2	25	0	0
Allen	2	1	5	1	0
Estill	1	1	2	0	0
Lee-Owsley	1	1	2	0	0
Floyd-Knott	1	0	0	0	1
Lawrence-Johnson	1	0	0	1	0
Cumberland	1	0	0	1	0
Total	25	17	419	7	1
Last week	23	20	387	3	0
Difference	2	3	32	4	1

Eastern Division

The 9 completions in the eastern Kentucky fields during the week show 2 dry holes, 1 gas well and 6 producers, with a production of but 22 bbls. In the South Weir Field, of Johnson-Magoffin Coun-

(Continued on Page 166)

W-K-M
Offers a Core Drill
with
Detachable *TOOL STEEL* Cutters

Heavily stellited, tool steel cutter blades enable the W-K-M Core Drill to make two or three times as much hole as a fish-tail bit, and to take perfect cores in the hardest formations ordinarily encountered.

AT first glance, this new W-K-M Core Drill is going to appeal to you immensely. For the first time in the history of rotary drilling, as far as we know, you can now match heavily stellited, detachable tool steel cutter blades against the dozens of tough formations you always have to cut through in digging for pay.

Results? Just what you'd naturally expect.

Capacity to cut through and take perfect cores, in all rock formations ordinarily encountered. Capacity to make three to five times as much hole in hard formations as a fish-tail bit. Capacity to core the stickiest gumbo or other formation without balling up. Capacity to make full size hole, without leaving shoulders when run in various sizes of casing. Lowest running costs, per foot of hole, of any core drill owing to tool steel blades and heavy stellite.

To fully appreciate the significance of this new tool steel Core Drill, you should read all the facts about it in the new booklet now on the press. Many illustrations, and prices are included. The coupon below, or a post card or letter, will bring it with our compliments, and no obligation.

Send in the coupon while you're thinking about it!

W-K-M Company, Inc.
HOUSTON — TEXAS

Send for Free Descriptive Price List

W-K-M Company, Inc.,
HOUSTON, TEXAS.

Gentlemen:-

Please forward descriptive pamphlet to the address below:

Name .....

Street .....

City .....

State .....

MEN KNOWN IN OILDOM

Edward G. Seubert

Edward G. Seubert, newly-elected president of the Standard Oil Company of Indiana, earned his first money as a newsboy in Syracuse, N. Y., where he was born in 1876. His parents came West while young Seubert was in his teens and located at Whiting, Ind. He left high school at an early age and became a mechanic's helper at the Whiting refinery in 1891.

His ability soon became apparent and he gave up his mechanic's job and was made general clerk and then cashier. From that time his rise toward the top of the ladder has been very rapid. In 1898, he was transferred to the accounting department in the general office, Chicago; in 1904, he became chief clerk of the manufacturing department and in 1911, auditor of the manufacturing department.

In March, 1919, Mr. Seubert was elected assistant secretary and treasurer of the company and in November of the same year was promoted to secretary and treasurer and given a place on the board of directors. In December, 1920, he was elected vice president.

Mr. Seubert also is on the board of directors of the Pan American Petroleum & Transport Company, Midwest Refining Company, and the Dixie Oil Company, Inc.

PERSONAL PARAGRAPHS

Elmer Gregory has returned to Petrolia, Ontario, from the Mexican fields.

* * *

Harlon Kilborn, of Casey, Ill., has left for a trip over the Oklahoma and Texas fields.

* * *

Charles W. Mascho, of Toledo, Ohio, spent a few days looking over the Saginaw, Mich., Field.

* * *

George Steiner, of Houston, Tex., is making a torsion balance survey in the vicinity of New Orleans, La.

* * *

Mrs. C. H. Hussey has returned to Petrolia, Ontario, from the Venezuela fields, where her husband is drilling.

* * *

Rome E. Goodwin, oil operator of Toledo, Ohio, is on a business trip to Philadelphia, Pa., and other eastern points.

* * *

John G. Pew, New York, vice president in charge of natural gas properties of the Columbia Gas & Electric Corporation, and Raymond Cross, Columbus, Ohio, vice president of the Ohio Fuel Corporation, were Pittsburgh, Pa., visitors last week.

E. C. Breene, president of the Winona Oil Company of Oil City, Pa., was in Tulsa, Okla., during the past week.

* * *

Carl J. O'Hornett, of Henryetta, Okla., has undergone an operation at Rochester, Minn., and is reported recovering.

* * *

J. M. Gardiner, treasurer of the Republic Oil Company, Pittsburgh, Pa., was a recent business visitor in Shreveport, La.

* * *

W. M. Keck, was re-elected president of the Superior Oil Company at the regular annual meeting held in Los Angeles, Calif.

* * *

M. J. Grogan, vice president, Louisiana Oil Refining Corporation, Shreveport, La., is confined to his home with a slight illness.

* * *

Henry S. Sturgis has been elected a director of the Tide Water Oil Company to complete the unexpired term of Francis D. Bartow.

* * *

Harry A. Wallace, vice president of the Columbia Gas & Electric Corporation, Charleston, W. Va., was in Pittsburgh, Pa., recently on business.

* * *

Phillip T. Peters, Jr., of Casey, Ill., has accepted a position with the Atlas Supply Co., at Wetumka, Okla., and left for the Mid-Continent Field.

* * *

George B. Davies, assistant sales manager of the Louisiana Oil Refining Corporation, spent a few days in Chicago, last week on company business.

* * *

John P. Winters, production superintendent of the National Refining Company of Eldorado, Kans., spent several days in Tulsa, Okla., on business.

* * *

William Green, formerly a resident of Smithville, Tex., at which time he was president of the Cardinal Oil Company, has recently died at Lawton, Okla.

* * *

Thomas W. Streeter, chairman of the board of Simms Petroleum Company, has been elected a director of the Richfield Oil Company of California.

* * *

W. E. Wood, secretary and treasurer of the Kingwood Oil Company, Okmulgee, Okla., has been called to the home of his mother in California who is seriously ill.

* * *

G. A. Axelson is retiring as president of the Axelson Machine Company, and will be succeeded by Jule C. Axelson, who has been general manager for a number of years.

* * *

Wallace B. Gribble, Clarksburg, W. Va., superintendent of the Hope Natural Gas Company and the Reserve Gas Company, visited the home office at Pittsburgh, Pa., last week.

* * *

S. R. Parsons, president of the British-American Oil Company, Toronto, Ontario, has retired to become chairman of the board and has been succeeded by A. L. Ellsworth, formerly vice president.

* * *

E. T. Williams, formerly president of the E. T. Williams Oil Company of Casper, Wyo., who is now engaged in drilling operations near Del Rio, Tex., has been in Laredo, Tex., looking over that territory.

* * *

F. A. Leovy, of the Gulf Refining Company, Pittsburgh, Pa.; Underwood Nazro, Houston, Tex.; E. C. Kincade, Houston, Tex., and L. P. Garrett, made a tour of inspection through Arkansas fields last week.

* * *

Eugene Campbell, representing the Halliburton Oil Well Cementing Company, Duncan, Okla., has been called from Shreveport, La., to operate a sand tester in the Oklahoma fields. He was succeeded in Shreveport by Robert Booth, Wewoka, Okla.

* * *

At the annual meeting of the Galena-Signal Oil Company, F. A. Burgess was elected a director, succeeding C. W. Hochette, and M. J. A. Bertin was elected a director succeeding L. J. Drake, resigned. Mr. Bertin was elected president, succeeding L. J. Drake, and J. French Miller was elected treasurer, in place of William P. Westcott.

John B. Corrin, Pittsburgh, Pa., vice president and general manager of the Hope Natural Gas Company and the Reserve Gas Company, sailed from New York City on the S. S. Reliance of the Hamburg-American line for a cruise to the West Indies and will return the latter part of the month.

* * *

Walter Varnes, of Independence, Kans., who was associated with Allen Parks in drilling the well known as the Ulf Varnes well in southern Bexar County some years ago, was in San Antonio, Tex., for a few days visiting Mr. Parks on his way to Laredo, Tex.

* * *

A. D. Morton, of Bartlesville, Okla., J. C. Knupp of Augusta, Ga., and J. C. Keller and Walter Buoy of Iowa Park, Tex., all connected with the Ryan Consolidated Oil Company, have been in Eagle Pass, Tex., arranging for a number of deep tests that the company is to put down on the Indio ranch recently leased.

* * *

Tom M. McKinney, who has been head of the land lease department for the Roxana Petroleum Corporation in the Wichita Falls, Tex., district during the past four years, has resigned effective March 1. He will be succeeded by W. C. Davis who recently moved to Wichita Falls from the Dallas, Tex., headquarters of the company.

* * *

F. J. McDonald, Jr., has been named as Oil City, Pa., agent of the South Penn Oil Company as the successor of the late J. G. Skelly. Mr. McDonald has been an employe of the South Penn for eight years and is a resident of Titusville, Pa. Charles Johnson has been transferred from the Pittsburgh office to act as Mr. McDonald's assistant.

* * *

Ross Corlett, who has been engaged in private engineering practice in Wichita Falls, Tex., for the past four years, and prior to that was with The Texas Company, has been appointed chief engineer of the Continental Oil Company of Texas, in charge of production. His headquarters will be maintained at Wichita Falls.

* * *

F. B. Allen has been named superintendent of the Warren and Oil City West Side districts of the National Transit Company, succeeding Noble Clark of Warren, who died recently. Mr. Allen will be succeeded as foreman of the Oil City West Side district by Theodore Glenn. Both Mr. Glenn and Mr. Allen have been long-time employes of the National Transit Company.

* * *

Frank B. Firmin, for the past five years cashier of the Casper, Wyo., office of the Ohio Oil Company, has been promoted to the position of assistant treasurer of the company with headquarters at Findlay, Ohio. Mr. Firmin has been connected with the Ohio for a number of years, holding various positions of responsibility. L. M. Kiplinger, formerly cashier for the Ohio Oil Company at Laramie, Wyo., but more recently connected with the Shelby, Mont., office of the company, has arrived in Casper to fill the position vacated by Mr. Firmin. Mr. Kiplinger was assistant cashier at the Casper office six or seven years ago, previous to his transfer to Laramie.

* * *

Officials of the Standard Oil Company of New York and of the Magnolia Petroleum Company have been on a tour of inspection of fields in the Mid-Continent in which the Magnolia is a producer and purchaser of oil. The Standard Oil Company officials included H. L. Pratt, president; Theodore Pratt, of the board of directors; E. R. Brown, president of the Magnolia and a vice president of the Standard Oil Company; C. M. Higgins, vice president; H. E. Cole, vice president; C. F. Myer, vice president; R. A. Spear, general attorney of New York City, and W. B. Walker, director. Magnolia officials included D. C. Stewart, manager pipe line department; T. J. Fitch, superintendent of the pipe line department, Dallas; E. E. Plumlee, manager of refineries, Beaumont; H. G. Spaulding, vice president, Dallas; W. C. Proctor, treasurer, Dallas; W. H. Francis, general attorney, Dallas; M. J. McLaughlin, production manager, Dallas; F. B. Faulkner, production manager, Dallas; and E. P. Angus, Dallas. Lionel Barenson, president of the General Petroleum Company of California, was also a member of the party.

"OILWELL"
OIL BATH ROTARY SWIVEL

All working parts operate in a bath of oil, which eliminates the constant care of lubrication.

The swivel will not bind in operation.

No sand, grit, or other substances can come in contact with the moving parts, because all working parts are completely enclosed. This insures long life to the parts.

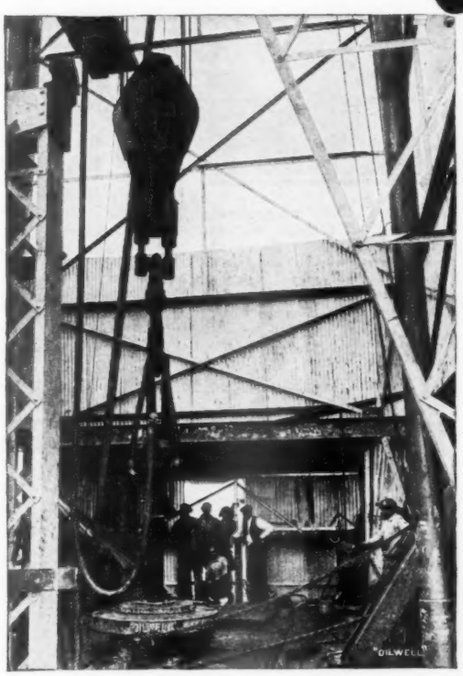
All glands are packed and adjusted from the outside, without removing any part of the swivel.

Note the bail rest which holds the bail out at an angle of approximately 45°, thus enabling the hook to be connected or disconnected without danger or difficulty.

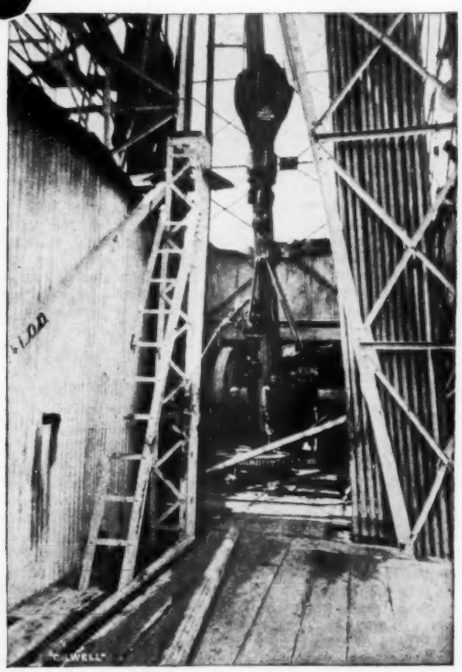
One **"OILWELL"** Oil Bath Rotary Swivel will do the work of two ordinary swivels, because you can use it continuously. There is no need for an extra swivel for emergencies.

Send for special Bulletin, or inquire at any of our 100 Branches.

"OILWELL" Rotary Outfits, being made up of component parts each of which is a leader in its line, are vastly superior to any other outfits.



"OILWELL" Oil Bath Swivel in the California Field.



Another **"OILWELL"** Oil Bath Swivel in the California Field. Drilling below 6,000 feet.

OIL WELL SUPPLY CO.

NEW YORK—LOS ANGELES—PITTSBURGH, U.S.A.—SAN FRANCISCO—TAMPICO—LONDON

WORLD'S OLDEST AND LARGEST MANUFACTURERS OF OIL FIELD EQUIPMENT

Natural Gas Developments

COLUMBIA GAS REPORT OF PRESENT POSITION

The Columbia Gas & Electric Corp., successor to Columbia Gas & Electric Co., in its annual report states that at the end of the year a major financing step was in progress, consisting of the issuance of additional shares of common stock for the purpose of paying off approximately $11,000,000 of funded debt, due January 1, 1927, and providing additional capital for the requirements of the properties. The report contains a balance sheet as of December 31, 1926, adjusted to give effect to the results of this financing. This adjusted consolidated balance sheet of the corporation and its subsidiaries shows total assets of $501,559,403, of which fixed property constitute the major portion amounting to $439,259,858. The current position, after giving effect to the financing shows total current and working assets of $46,285,910 against current and accrued liabilities of only $14,641,661, the cash item alone of more than $18,000,000 being larger than the amount of all current and accrued liabilities.

The funded debt on the balance sheet appears at $52,479,197, not including funded debt of leased companies amounting to $23,126,800—a total of $75,747,100 funded debt of the companies of Columbia system, gross earnings of which are reported in excess of $92,000,000. Capital stocks of the corporation total $213,659,400, with $20,669,787 of stock of subsidiaries owned by the public, or total capital stock on the balance sheet of $234,329,187. Reserves for renewals and replacements and depletion, etc., of $120,484,263, and surplus of $74,238,317 are other items in the balance sheet.

The report reveals a record position for the corporation and subsidiaries controlled by practically 100 per cent common stock ownership. The audited income statement shows gross earnings from gas, electric and other operations of the system for 1926 of $92,119,615; other income of $3,330,362, and total net earnings and other income of $35,507,571 after operating expenses, provision for renewals and replacements and depletion, and taxes. After lease rentals and fixed charges there was net income of $26,470,907 available for dividends. Dividend requirements on the stocks issuable under the merger last November of Columbia Gas & Electric Co. and Ohio Fuel Corp. total $5,711,088 for the 951,848 shares of 6 per cent preferred stock and $15,000,000 on the 3,000,000 shares of common. After preferred dividends this is equivalent to $6.92 a share on the common.

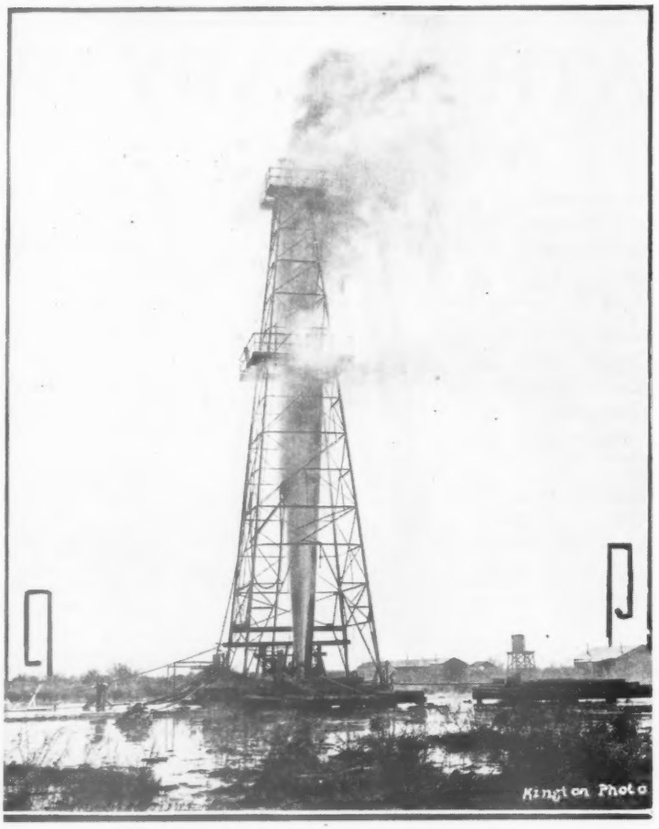
The corporation and its subsidiaries now have 57,300 shareholders, of whom more than 34,550 are holders of the outstanding stocks of Colombia Gas & Electric Corp. and 22,750 are holders of stocks of leased companies and preferred stocks of subsidiary companies.

Capital expenditures in 1926 for additions and extensions to the properties now comprising the system aggregated $28,299,511. During the year there were withdrawn from the hands of the public $18,384,325 par value of securities, including notes outstanding at the beginning of the year. This amount also includes about $11,000,000 of first mortgage bonds and debentures of Columbia Gas & Electric Co. (West Virginia) which became due January 1, 1927, as well as securities retired by sinking fund operations and by voluntary purchases.

The funds needed for this purpose and for the acquisition of some additional subsidiaries were provided partly by the sale of investment securities previously owned, from which $3,967,947 were realized, by the issuance of $9,558,200 par value of notes and stocks of subsidiaries, by borrowing $20,000,000 temporarily pending the additional stock financing and by the use of more than $13,150,000 from the current earnings of the properties.

Companies constituting Columbia system, including the leased companies, had outstanding on December 31, 1926, after giving effect to the adjustments shown in the adjusted balance sheet, $663,653,175 par value of securities, including the stated capital represented by shares of common stock of no par value, of which $355,557,196 are in the hands of the public. Of this latter amount, 21 per cent consists of funded debt of subsidiary and leased companies, 19 per cent of preferred stocks of subsidiaries and capital stocks of leased companies, on which dividends are paid as rentals at rates fixed by the various lease agreements, and 60 per cent of the outstanding securities of Columbia Gas & Electric Corp. The latter, in turn, are made up of preferred stock, 43 per cent, and common stock, 57 per cent.

KLEBERG COUNTY'S 80,000,000-FOOT GASSER



Humble Oil & Refining Co.'s No. 3 Flato in the Kingsville Field, Kleberg County, Texas, came in at 2,250 feet with 10-inch casing set at 1,485 feet, running wild and making an estimated 80,000,000 feet of gas with considerable sulphur water and sand and showered sand over an area of about 100 acres of land. The well came in as the drill stem was coming out of the hole with a core barrel and 13 joints of drill stem with the core barrel stayed in the hole and is probably cut to pieces with the sand. Sand at the same depth in four wells a half mile north is producing pipe line oil.

WAURIKA GAS FRANCHISE

Harry F. Mitchell and associates, who had been granted a franchise to pipe natural gas into Waurika, Okla., have turned over the franchise to the Community Natural Gas Co., affiliated with the Lone Star Gas Co., and the Community is arranging to begin laying a pipe line which will tap the Lone Star main line 12 miles west of Waurika and officials say will be completed by the middle of July. When Mitchell and associates were granted the franchise they expected to develop a gas pool near the bluff of Red River in the southeastern part of Jefferson County, opposite the Nocona, Tex., oil and gas pool.

CLAIMING NEW RECORD IN LAYING GAS MAIN

WICHITA FALLS, Tex., Mar. 5.—The Hope Engineering & Supply Co., with James Manaugh as construction superintendent, probably smashed all records for speed in the placing of approximately 3 miles of 16-inch gas line which is being laid for the Upham Gas Co. as its main feeder from the Hutchinson Field to this city.

Starting off the day's work at 7:30 a. m., this crew, with the aid of the W-K-M Co.'s winches and booms attached to Fordson tractors, placed in position and bolted in 5½ hours 900 joints of 16-inch pipe, each joint of a length of 20 feet, or a total of 18,000 feet.

The test took place between Iowa Park and Wichita Falls and surpassed the company's previous record of 1,160 joints in 8½ hours, made some time ago on entering Vernon.

PRESIDENT S. H. BUCKNER REPORTS GAS PROGRESS

E. H. Buckner, president of Houston Oil Co. of Texas, in his 1926 report, says in part:

"The most important new business of the year was the contract of Houston Pipe Line Co. with Freeport Sulphur Co. for the fuel requirements of that company in its sulphur mining operations at Hoskins Mound and Bryan Mound in Brazoria County, Texas. This necessitated the building of an additional 54 miles of 16-inch line and a main compressor station at Edna, Tex., at a total cost of $1,600,000. The line was completed and deliveries started to the sulphur company on November 1, 1926, since which time they have been receiving approximately two-thirds of their fuel, and when the compressor station at Edna is completed, about March 15, 1927, they will be furnished the full amount of their fuel requirements.

"On account of increasing demand for gas in the Houston district, it was thought best to extend our line from Lucas in Live Oak County, Texas, into the Laredo fields, and accordingly 82 miles of additional line were built at a cost of $1,300,000, connecting the Cole-Bruni and Carolina-Texas Fields to our system, which gives the pipe line company connections with all the commercial gas fields of south Texas.

"The Houston Pipe Line Co. now has 300 miles of main line and 132 miles of branch lines in operation, together with 24 miles of gathering lines in the various gas fields, with an ample supply of gas."

CENTRAL ALBERTA OIL AND GAS ASSOCIATION

CHATHAM, Ontario, Mar. 5.—W. R. Howson was re-elected president of the Central Alberta Oil & Gas Association at its annual meeting at Edmonton. J. B. Gillies was re-elected secretary and N. C. Leggee, treasurer. Other members of the directorate are: Dr. Edgar W. Allin, E. T. Bishop, John Blue, Earl L. Cork, H. W. B. Douglas, Martin L. Forester, Colin Groff, W. B. Hanson, R. W. Jones, John Kenwood, H. W. Love, R. C. W. Lett, J. F. Maloney, J. L. Mercer, A. M. Mowatt, J. H. Ogilvie, Robert Spencer, Sam H. Smith, Howard Stutchbury, T. J. Sugars, Dr. C. C. Tatham and Will Werner.

A resume of the year's work was given by President Howson. Addresses were given by T. G. Madgwick, recently appointed petroleum engineer to the Department of the Interior at Calgary, and by William Calder, oil and gas inspector.

LINE FROM KINGSVILLE

SAN ANTONIO, Tex., Mar. 5.—It is understood that as soon as the Humble has increased its production a little from the Kingsville Field with additional wells it will build a pipe line from the field northwest to Driscoll where it will connect with the company's line now in operation from the Mirando Field to Ingleside north of Corpus Christi where it loads to vessels and ships by water. Humble now has a 4-inch, 5-mile line from the field to Ricardo on the Missouri Pacific over which it ships by tank car lots.

NEW LINES FOR COMANCHE

New feeder lines, which will insure an adequate supply of gas for all sections of Comanche, Okla., have been completed by the Southwestern Gas & Fuel Co. The work here has been underway for several months. The company's crew will now install improvements to the distribution system at Marlow.

90,000,000 ft. wild gasser capped with Regan Equipment!

Form 1201

CLASS OF SERVICE	SYMBOL
TELEGRAM	
DAY LETTER	BLUE
NIGHT MESSAGE	NITE
NIGHT LETTER	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

WESTERN UNION TELEGRAM

CLASS OF SERVICE	SYMBOL
TELEGRAM	
DAY LETTER	BLUE
NIGHT MESSAGE	NITE
NIGHT LETTER	N L

If none of these three symbols appears after the check (number of words) this is a telegram. Otherwise its character is indicated by the symbol appearing after the check.

NEWCOMB CARLTON, PRESIDENT GEORGE W. E. ATKINS, FIRST VICE-PRESIDENT

The filing time as shown in the date line on full-rate telegrams and day letters, and the time of receipt at destination as shown on all messages, is STANDARD TIME.

Received at 107 Seventh Street, San Pedro, Calif.
Telephone 830

B7S M 57 NL 4 EXTRA

AMARILLO TEXAS FEB 14 1927

REGAN SALES CO

REGAN ST SANPEDRO CAL

JUST FINISHED SUCCESSFULLY CAPPING OUR NINETY MILLION FT WILD GASSER AT SHAMROCK TEXAS WITH REGAN CONTROL HEAD UNDER COMPLETE SUPERVISION OF YOUR SERVICE DEPARTMENT COMMANDED BY YOUR MR LEW D. HILTON AND HIS ASSISTANT MR W H PROCTOR THIS WIRE IS SENT YOU IN APPRECIATION OF HIGHLY EFFICIENT SERVICE AND SPLENDID EQUIPMENT SIGNED

SHALLER ASSOCIATED OIL CO
J E SWEATTSUPT
822AM 75

Houston, Texas
1521 Post Dispatch Bldg.

New York City
75 West St.
Wm. Braat, Manager

Regan
Forge & Engineering Co.
San Pedro California
Quality — wrought on the Forge of Experience

Oklahoma City, Okla.
531 W. Main St.

Maracaibo, Venezuela
Wm. Adams,
care Amer. Consul

EQUIPMENT AND SUPPLIES

CHURCH BELL RESTORED BY ELECTRIC WELDING

After a silence of 40 years, a 922-pound bell in the First Unitarian Church of Taunton, Mass., was repaired by electric arc welding, and rung for the first time on Sunday, February 13. The church was founded in 1637, and the bell was cast in 1804 by George Holbrook, who learned his trade as an apprentice to Paul Revere. The bell was found to be cracked in 1886 and since that time has been silent.

For the last two years, there has been agitation to repair the bell. The General

Electric plant at Lynn was called upon for assistance, specimens of the bell metal were taken, and an investigation of the crack made. The bell is 34 inches in diameter at the mouth, 18 inches in diameter at the top, and 26 inches high. The crack was 17 inches long, and had a section varying from 1 inch in thickness to 2⅝ inches maximum near the outer edge. The bell metal was found to contain 83 per cent copper and 17 per cent tin.

After the crack had been prepared for welding, a standard motor generator, constant energy type of welder was employed in the actual welding, an electric power line having been installed in the belfry, 56 feet from the ground. Power lines were run down from the belfry to the welding outfit on the ground, and the welding leads were extended up to the bell.

The bell was first preheated, using a large, double Bunsen burner. The welding operator started with the carbon arc type of welding, and finished with the metallic arc process. Phosphor bronze welding rods were used, having an analysis of about 95 per cent copper and 5 per cent tin.

The bell bears the inscription:

For Taunton
To the Church the Living Call
And to the Grave I Summon All.
1804 George Holbrook Brookfield, Mass.

BUTLER MANUFACTURING PERSONNEL CHANGES

At a directors meeting of the Butler Manufacturing Co. February 17, William (Billy) A. Knapp was elected vice president, and Fred A. Rufi was elected secretary. "Billy" Knapp was formerly secretary, and Fred A. Rufi formerly assistant first vice president. Mr. Knapp began work as secretary to C. R. Butler 16 years ago, and Mr. Rufi began as cost clerk 18 years ago. It has always been the policy of the Butler Manufacturing Co. to promote employes wherever possible. They will both continue to perform their previous duties—"Billy" Knapp in charge of sales and advertising and Fred A. Rufi in charge of purchases.

COAL STRIKE UNLIKELY TO AFFECT GENERAL STEEL TRADE MATERIALLY

By B. E. V. Luty

PITTSBURGH, Pa., Mar. 7.—Now that the last month before the coal strike has been entered there is a more definite canvass in the steel trade of the probabilities. That there would be a long strike has been generally recognized. How broad the strike would be, i. e., how much striking the United Mines Workers could produce in non-union fields, particularly the Connellsville coke region, West Virginia and Kentucky, has been a matter of conjecture. The probable outcome of the strike has hitherto been accorded little discussion.

The view now is that there probably will be some trouble in the Connellsville region, but not a great deal, and that there will be a good bit of striking in West Virginia and Kentucky. It seems unlikely that there will be enough to swing the contest in favor of the United Mine Workers. It must be remerbered that while the union won the 1922 strike that really resulted through railroad conditions. Quite a congestion of Kentucky coal occurred and then there were railroad strikes. Such railroad strikes certainly cannot be counted upon this time.

Factors in Situation

That will make a great difference. There are three other important differences. First, the Connellsville region in general is now paying rates above the regular non-union rates, with a basic day rate of $6 against $5 in the old non-union scale and $7.50 in the union scale. Second, there is a vastly stronger element in the Pittsburgh district to oppose the union. The Pittsburgh Coal Company has been operating open shop since August, 1925, beginning with one mine and for months past having at least a dozen mines operating, while the Jones & Laughlin Steel Company has accumulated a huge pile of coal, with the view eventually of getting its Pittsburgh district mines to a lower scale, while the National Mining Company of the United States Steel Corporation is understood to intend to contest with the union, instead of going along as formerly. Third, the bankers have changed their views as to supporting the Illinois and Indiana operators in paying the union scale and will call upon them to get their wages down to a competitive level with the non-union fields if they want banking assistance continued, and that is something they must have.

Even a long and broad strike would be unlikely to affect the general steel trade in very marked manner, as steel production is so well distributed. Even a large increase in cost of fuel would have difficulty in working out in increased steel market prices. With pig iron it would be different. There are stocks of pig iron at some merchant furnaces and with a short coke supply these would be worked off and merchant pig iron prices would advance. Not for years has there been much connection between steel prices and pig iron prices, for merchant pig iron goes chiefly to foundries, steel producers buying but little as they are in general self-contained.

Steel Market Improves

The steel market continues to improve a little from week to week in the matter of demand. There has been a decided increase in the past fortnight in automobile trade buying, though that industry is not yet up to an average operation. Miscellaneous buying has been good.

Steel production in February was at about 85 per cent of capacity, against 81½ per cent in January and 74½ per cent in December. This month's production will doubtless be heavier, but will hardly be up to that of last March, the peak of the year, at 92½ per cent.

Steel prices have been slipping more or less at one point or another for quite a while past, but in the past week there has been no particular slipping and there are signs of some firming up. The large mills are trying hard to re-establish 2.00c as the small lot, down to carloads, price of bars and shapes, so as to protect the 1.90c market on large lots, while strip mills have put out advanced prices, which may hold.

The valley pig iron market remains dull, but prices are very firm at $19 for Bessemer, $18 for basic and $18.50 for foundry, f. o. b. valley furnaces. Connellsville coke is very steady, but not active.

ANNOUNCE INTRODUCTION OF NEW CHAIN VISE

The Nye Tool & Machine Works of Chicago, Ill., announces the introduction

of the chain vise illustrated above. The new vise is handy and compact, and possesses maximum strength, while of minimum weight. It is equipped with standard jaws, and it is announced has features not found in similar vises.

INTRODUCE NEW SWIVEL WITH SPECIAL FEATURES

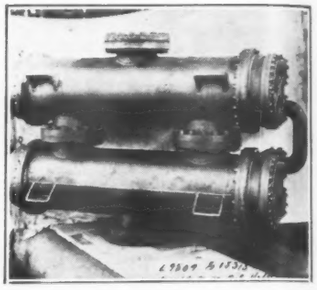
After successfully undergoing exhaustive tests a new swivel is being introduced by Regan Forge & Engineering Co. for rotary service. This swivel is said to be unique in that it embodies four-point suspension with universal joint principle. The manufacturers declare that by adoption of this principle the problem of strain imposed by forces outside of the swivel are successfully overcome. They further declare that any external forces such as whipping of the Kelly, crooked hole, bent Kelly, settling of derrick or shifted position of any of the equipment cannot strain or harm the swivel.

ADJUSTABLE FLOW BEAN

The Shaffer adjustable flow bean is offered for adjusting the pressure and rate of flow of oil and gas from the well so that amount of gas to produce a barrel of oil is reduced to a minimum. The construction consists of a venturi tube screwed into a forged steel tee in which is a screw having a hardened steel tip. On the screw is a gauge by which the size of the orifice can be quickly ascertained. The size of the orifice is adjustable from zero to the full size of hole in venturi tube by simply turning a hand-wheel. A clamp locks the screw in position and means for padlocking the hand-wheel can be furnished if desired. All parts coming in contact with fluid are of rolled or forged steel.

NEW CONDENSER SHELL MADE OF WELDED STEEL

The use of electric arc welding in oil refinery apparatus has brought about some radical changes in design of the apparatus. The accompanying illustration, showing a vapor line condenser made with a welded steel shell instead of



a castiron shell, is an example of a change brought about by the welding practice.

The condenser illustrated is one of the many types manufactured by Griscom Russel of Massillon, Ohio. Widely different types of vapor line equipment are manufactured by the Lincoln Stable-Arc Welder Process. Since no patterns are required in the welded steel construction, special conditions may be met without the expense of new patterns or changes in old patterns. As is indicated by the uniform appearance of the welds, great care is exercised in the selection and training of welding operators.

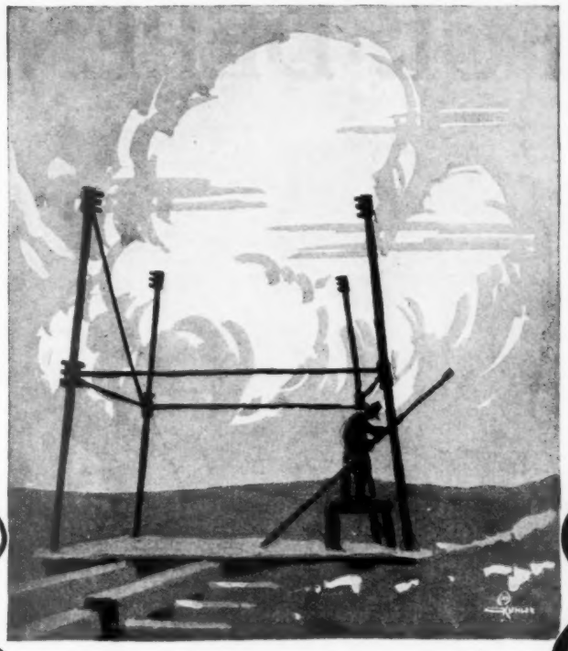
IMPORTANT FEATURES OF NEW POWER DRIVE

The Toledo Universal power drive is a new item of the Toledo line that promises to prove popular with users of pipe tools, according to the manufacturers, the Toledo Pipe Threading Machine Co., Toledo, Ohio, makers of Toledo pipe threading devices and kindred tools.

This new Toledo Universal power drive is similar in appearance to the Toledo Junior power drive. It is equipped with a one-half horsepower universal motor which will operate from a light socket on any 110-volt current. The motor is reversible, and after the thread is cut the operator backs the dies off the completed thread simply by a turn of the switch conveniently located near the driving head. It automatically slows down on the heavy pulls, speeds up on the light loads and thus, it is said, assures the operator maximum efficiency.

REPRESENTATIVE FOR ASCOLOY

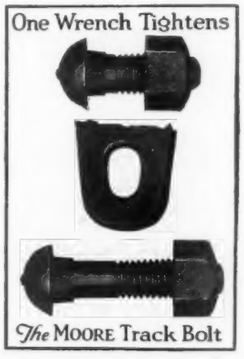
B. V. Emery & Co., Inc., with offices at 124 West Third St., Tulsa, Okla., is the Southwest representative for Allegheny Steel Co. of Pittsburgh, Pa., in the sale of Ascoloy. Ascoloy is a chromium-iron electric furnace product, developed after years of research and effort on the part of Allegheny Steel Co. to find a product suitable for industrial use which would overcome objections caused by abrasion, corrosion and excessive pressures and temperatures. Tests made by refiners have proved that Ascoloy performs remarkably when subjected to the corrosive and oxidizing agents in sulphurous crudes.



Easiest to Erect

MOORE Tubular Steel Derricks are easiest to erect, because they are really *built* at the factory. In the field, it is only necessary to assemble the few simply constructed parts. Common laborers can do the work and an ordinary wrench is the only tool needed.

It is easy to dismantle a Moore derrick too. In both erecting and dismantling it acts as its own scaffolding.



Moore
TUBULAR STEEL DERRICKS

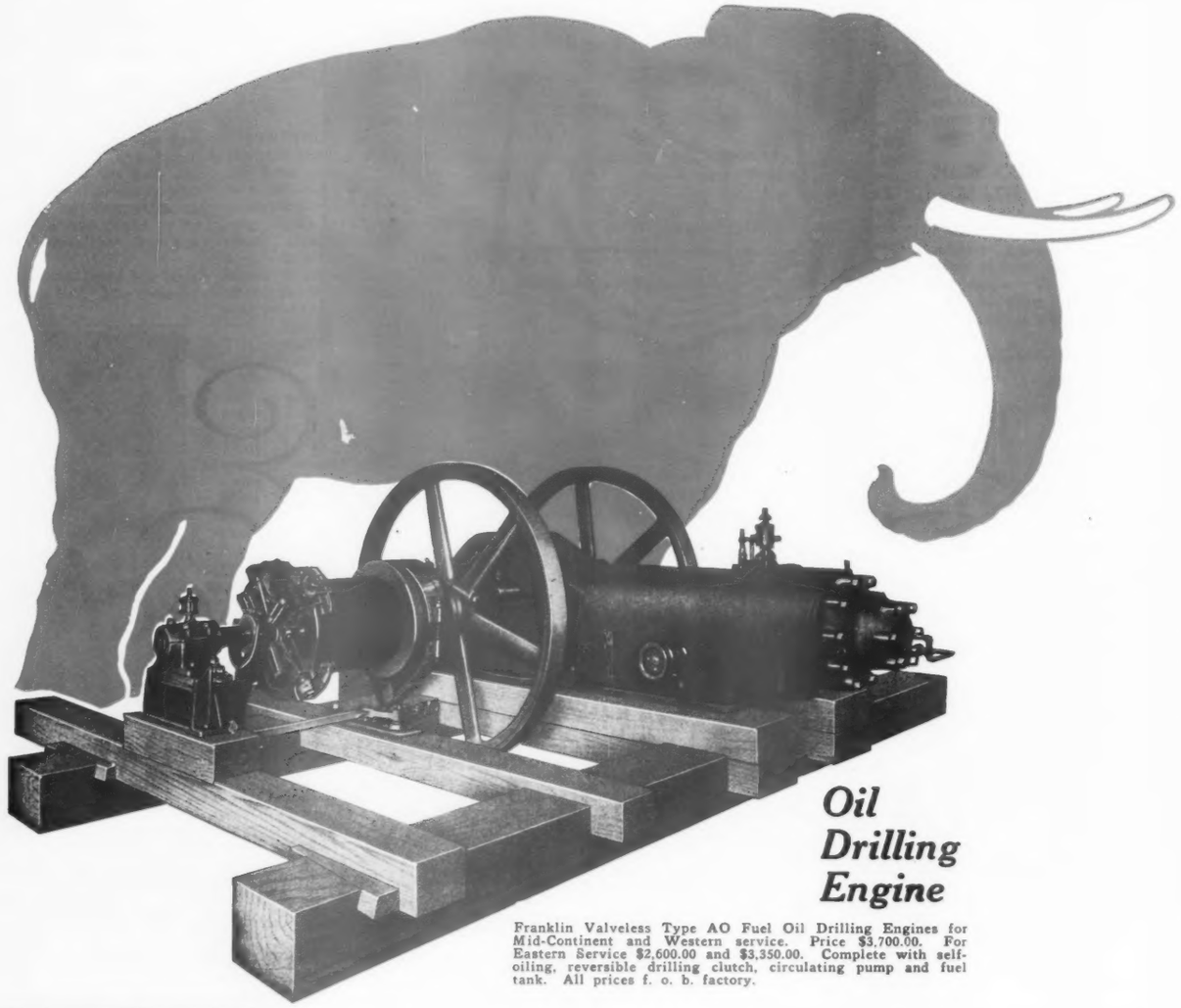
"World Wide Service for Twenty Years"

LEE C. MOORE & COMPANY, *Inc.* PITTSBURGH · TULSA

Established 1907

CASPER, WYO. Midwest Building · DALLAS, TEXAS Magnolia Building · SHREVEPORT, LA. Merchants Building · EL DORADO, KAN. Santa Fe Tracks · PARKERSBURG, W. VA. Union Trust Building

POWERFUL DEPENDABLE



Oil Drilling Engine

Franklin Valveless Type AO Fuel Oil Drilling Engines for Mid-Continent and Western service. Price $3,700.00. For Eastern Service $2,600.00 and $3,350.00. Complete with self-oiling, reversible drilling clutch, circulating pump and fuel tank. All prices f. o. b. factory.

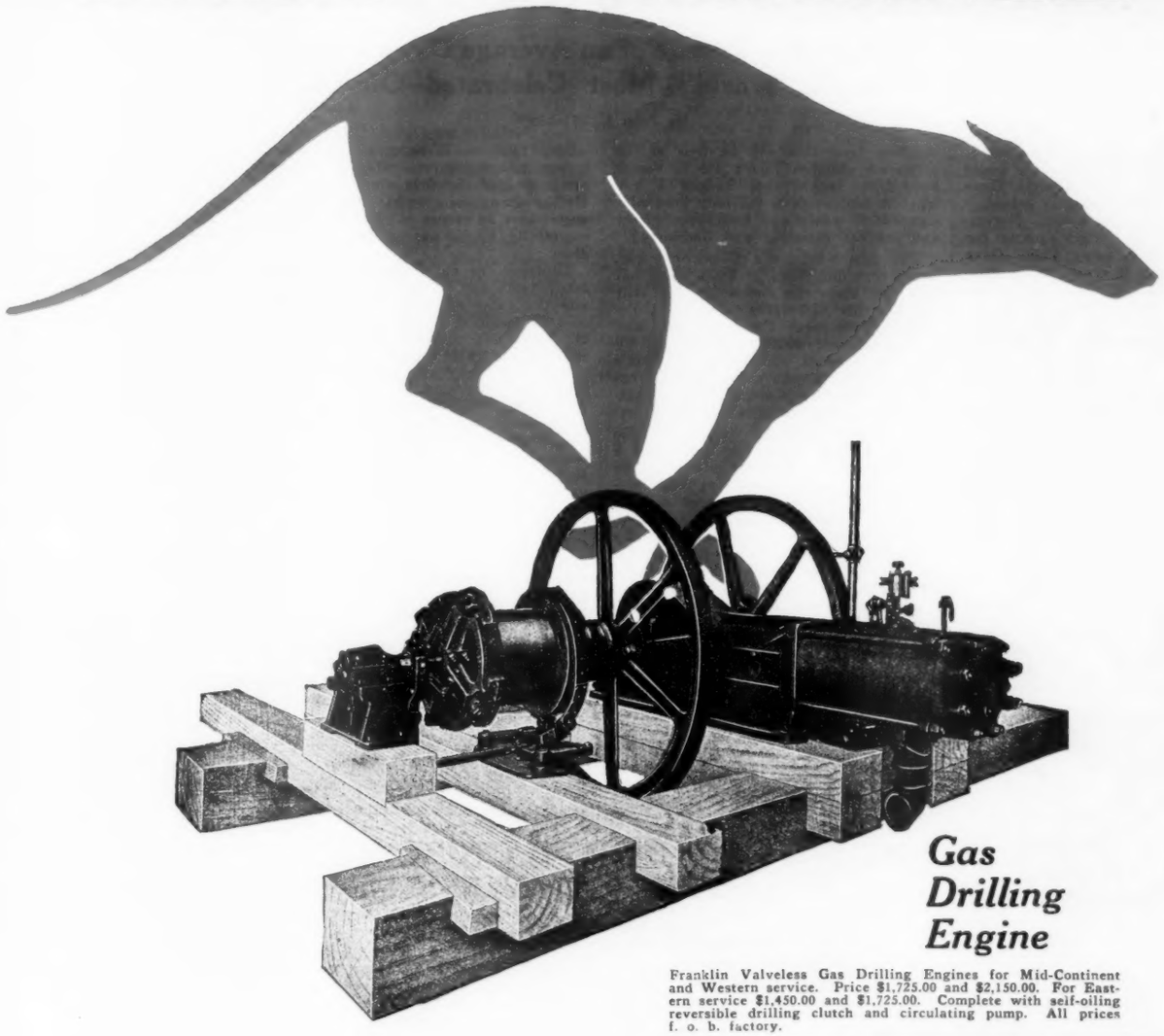
Franklin Valveless Engines are made in types for both Oil and Gas Fuel for cable tool drilling—for any condition or depth. The Franklin is a single cylinder, three-port, two-cycle VALVELESS engine and is constructed with the fewest possible number of parts. The construction keeps out all sand and grit; no valve grinding and the bath lubricating system used reduces lubrication bills 75%.

We can show you records of Franklin Valveless Engines that have drilled from 10 to 18 wells ***without one cent of repair cost.***

Add to that virtue, the lowest of operating costs, yet power, speed and flexibility and you know why the Franklins lead the field.

FRANKLIN VALVE

FAST FLEXIBLE



Gas Drilling Engine

Franklin Valveless Gas Drilling Engines for Mid-Continent and Western service. Price $1,725.00 and $2,150.00. For Eastern service $1,450.00 and $1,725.00. Complete with self-oiling reversible drilling clutch and circulating pump. All prices f. o. b. factory.

Interchangeable—Drilling, Pumping

Where gas is available the Franklin Valveless Gas Drilling Engine while being just as efficient and economical as the Oil Drilling Engine, it has another big advantage—INTERCHANGEABILITY. 25-30 H.P.—40 H.P.—50 H.P.—60 H.P. Gas Engines are all interchangeable on the same block. You can leave the Gas Drilling Engine on the block for pumping or replace it with one of less horse power without changing a single bolt.

Franklin Valveless Engine Co.

Franklin, Penna.

DISTRIBUTED BY

Atlas Supply Company
Muskogee, Okla., and Branches

New Martinsville Supply Company
New Martinsville, W. Va.

Wooster Tool & Supply Company
Wooster, Ohio

Bradford Sales Company
Bradford, Penna.

International Supply Company
Tulsa, Okla., and Branches

Atha Supply Company
Zanesville, Ohio

Washington Engine & Pump Company, Washington, Penna.

McEwen Brothers
Bolivar, N. Y.

The American Tank Company of Colorado, Casper, Wyoming

LESS ENGINES

Personal Sketch of John D. Rockefeller

Intimate Pen Picture of an Average Day's Round With the World's Most Celebrated Oil Man

By John K. Winkler*

"September 26, 1855—January 1, 1856: received $50 (wages). Paid board and washerwoman. Saved a little. Gave penny each Sabbath to Sunday school.

"1856—wages $25 per month. November 24, 1855—April, 1856: spent for clothing, $9.09. Gave away, $5.58. Gave to foreign missions, 10 cents; to the Mite Society, 50 cents; to the Five Points Mission in New York, 12 cents."

Almost every family has a totem, whether it's a daguerrotype of Grandma at 16, father's first pair of long ones or the plaque brother Ben won pitching horseshoes at the county fair.

The symbol the Rockefeller family is most proud of is a small, wrinkled, memorandum book known as "Ledger A." Ledger A contains an account of every penny "Deacon" John D. Rockefeller earned and spent during his boyhood and early business years. It is John D.'s choicest treasure. The Rockefeller seedlings, as they have made their bow to the sunlight during the past half century, have been taught to reverence Ledger A. Occasionally, the Lord of Oil himself opens the yellowed little volume before the usually awed eyes of his grandchildren.

John D. Rockefeller

It was a grandson who dissolved one such solemn ceremony into decidedly un-Standardized laughter. From a wealth of newly-acquired, tutor-taught knowledge, this weanling placed an accusing finger upon an entry in the ledger and pointed out:

"Grandpop, everybody that knows anything spells toothbrush with two o's!"

Grandpop explained, with many a chuckle, that at the time he wrote "touthbrush," he was too busy checking grain on a Cleveland dock to mind his o's and u's. But, he assured his youthful critic, Grandpop got full value out of that t-o-u-thbrush, much better value than from a pair of gloves included in the $9.09 outlay for clothing. He never neglects to explain regret at this sinful extravagance.

"I don't know why I bought those gloves," he wags his head sadly. "I was wearing mittens at the time, always had worn mittens, and they were cheap and comfortable. No, I can't say to this day what caused me to waste that $2.50 on regular gloves."

Economy and Godliness

The Oil King's children and their children (and this will be true of the children's children that are to come) have been taught that Ledger A and what it represents is the only honorable signpost to peace and happiness, virtue and justice. Economy and Godliness!

The man who, as a 16-year-old boy, began that dim diary in 1855, stood not long ago upon the enclosed porch that encircles his $3,000,000 mansion at Pocantico Hills, near Tarrytown, and pressed electric switches. Instantly 30 acres of gardens and fountains, canals and cascades, brooks and grottoes, trees and terraces, pergolas and Grecian statues, sprang into multi-colored life.

As he created effects of indescribable beauty, playing upon the lights like a musician upon his keys, and, standing in the soft night overlooking his thousands of acres and the great moonlit sweep of the Hudson, the little shriveled-up man must have felt close to the infinite. But no revelatory expression crossed his countenance, curiously pallid like desert holly.

He turned off the lights and went in to the evening's diversions, attended by his son and other members of the family. To them he is hallowed. He never gives his own estimate of himself. He calls himself "just a man of figures." He repeats the phrase often and proudly.

Decoration of the Dime

I should like to be able to justify a slang phrase and write that John D. Rockefeller owns the first dime he ever made. That would be in character but it would be inaccurate. He has a memory record of the first dime he earned. He has shown his grandchildren the very spot where he earned it. But he admits, regretfully, he did not preserve that first dime.

However, he did think out a scheme many years ago to make people emphasize the value and treasure the possession of small coins. Accordingly, some 20,000 shining dimes and nickels have passed from his vest pocket into the hands of as many men, women and children.

In giving away these coins, the Richest Man in the World has not merely been "presenting a little souvenir" to chance acquaintances. There is deeper significance and deeper psychology in the matter than that. John D.'s intimates say he has a twofold purpose in bestowing the Decoration of the Dime: To inculate the principles of saving and thrift, and to establish warmer personal relations, with his fellows. Both objectives have been attained. People fashion amulets and watch charms of his bright coins. Hundreds have written that his small gift has turned their thoughts toward thrift and has become, in their particular households, a visible symbol of the necessity for saving.

A Paradox

These are beads in the rosary of Croesus, and he gloats over them. For he believes each bead betokens a deed well done and he sees himself eventually lifted up to the very gates of God by such strands.

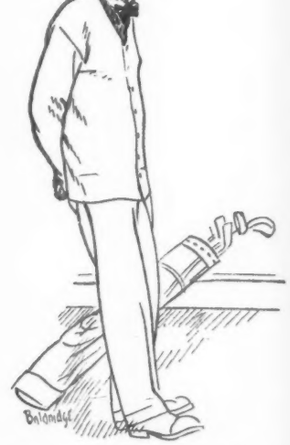
What an institution this man has become!

Occasionally the public catches a glimpse of him—muffled, bent, with age-worn skin, dark glasses generally concealing the ice blue eyes that gleam from sunken cheeks and skull bones. The casual observer, sighting him thus, might judge he was closely approaching the senile climacteric period of life.

But no one who does not come into close contact with Mr. Rockefeller can possibly sense the fire, cold but intense, that burns within that mummified frame. It is his inner fire that enables this remarkable individual to fend off the forces of dissolution.

Casting about feebly for a summary of the man, I can think of no better estimate than a paradox: At eighteen John D was old. Approaching eight and eighty, he is young.

Rockefeller has systematically and astonishingly steinached his spirit. With



no natural inclinations in that direction, he has learned to develop and live on the sunny side of his nature. Unquestionably this growth, whether real or synthetic, is his greatest triumph.

On January 8, 1927, he was eighty-seven and one-half years of age, by official count of calendar. Just as he determined, at 18, to become the richest man in the world, and succeeded, so he has determined to live on indefinitely upon an earth whose expansion he has so largely directed. This fine, factual mind has never known failure; and I, for one, would wager the price of a prophecy that he will be listening to a band playing music that is not slow in his secluded gardens at Pocantico Hills, on the afternoon of July 8, 1939.

John D., from what I have observed of him, will win through as our most prominent centenarian because he has been able to force himself to return to the simplicities, in spirit as well as in his physical life. Many of our famous citizens are seeking longevity. But none of these candidates for the longer life have been forced to hurdle John D.'s handicaps. Terrific burdens have been placed upon this man because of his very position as progenitor of the age of machinery, consolidation, and huge industrial development in America. Thirty years ago, by the very collisive nature

(Continued on Page 217)

*From The New Yorker.

POSSIBILITY OF OIL STRUCTURES OUT IN THE GULF OF MEXICO

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Mar. 5.—There are probably oil structures in the Gulf of Mexico off the coast of Texas that may equal some of the salt dome oil fields of Texas itself. It may be more difficult to find and drill them under water, but there is little room for doubt that they are there. With higher oil prices some of the drowned domes may some day be definitely located and possibly made to add to the petroleum supply of the United States, in the opinion of Dr. David T. White of the National Research Council.

About three years ago Doctor White, in conferences, expressed his views of the possibility of the existence of these oil structures in the Gulf of Mexico, but the above is his first public announcement on the subject.

The work of the United States Coast and Geodetic Survey has done much to add knowledge of the topography of the ocean bottom, and this information is sufficiently important in indicating possible anticlines and domes to add increased interest in the subject and to call to the attention of the oil industry generally the value of giving attention to the topography of the ocean bed.

Need Higher Prices

In explaining the situation to the writer, Doctor White was extremely conservative and desirous of avoiding any sensational interpretation of his view, which migh exaggerate either the general conclusions he has reached or the probability of oil recovery through these ocean beds. In the first place, such oil recovery, because of the attendant expense, could in general be accomplished only by a higher price for petroleum, and the engineers who might co-operate in such an enterprise would find themselves confronted with problems largely new to the industry.

The ownership of the ocean bottom beyond the 3-mile limit is also a question difficult for decision, as title to the bed of the ocean beyond 3 miles from the shore has never, so far as is known, been determined by any tribunal. Both Mexico and Honduras are on one side of the Gulf, but there is enough ocean bed off the coast of Texas to occupy the thoughts of geologists and engineers for a long time

Dr. David T. White

(Continued on Page 225)

GULF COAST FIELDS

(Continued from Page 61)

1 Pettus, 10 miles west of Goliad, drilling at 1,200 feet. Same company's No. 2 Parks, 8 miles east of Goliad, drilling around 2,310 feet.

Victoria County—R. M. Talbot's No. 1 Reeves, north of Victoria, is below 1,320 feet.

Sabine County—Chester Oil Co.'s No. 1 Pratt is below 1,100 feet.

Shelby County—Avalon Oil Co.'s No. 1 Pickering Lumber Co., spudded in.

Coastal Louisiana

Cameron Parish — Hackberry Island Dome: Yount Lee Oil Co.'s No. 5 School Land, is around 4,355 feet. The Union Sulphur Co. abandoned No. 1 Gulf at 1,750 feet. A location has been made for No. 2 Gulf. Same company's No. 1 Bell is around 1,765 feet and No. 1 Vincent is at 1,854 feet. No. 1 Little is rigging. The Border Research Co.'s No. 1 Mallard Bay is rigged and No. 1 in Sabine Lake is rigging. The Pure Oil Co. is waiting to start drilling No. 3 at Sweet Lake.

Calcasieu Parish—The Calcasieu Oil Co. abandoned No. 1 Mier. The Border Research Co.'s No. 1 in Calcasieu Lake is still shut down. Sulphur Dome: Union Sulphur Co.'s No. 720, drilling deeper around 2,618 feet.

Iberia Parish—Eagle Point Dome: Gulf Refining Co.'s No. 1-Z State is below 1,200 feet, with no show in the cap rock at 1,110 feet. No. 1 Broussard is idle. Union Sulphur Co.'s No. 1-A Shaw is around 900 feet. Border Research Co.'s No. 1 in Vermillion Bay is rigging. A derrick is up for the Jefferson Oil & Development Co.'s No. 1 Salt Mine.

St. Martin's Parish—Ohio Oil Co.'s No. 3 Martin and Rycade Petroleum Co.'s No. 1 Atchalafa are still idle.

St. Mary's Parish—Border Research Co.'s No. 1 Grand Lake, shut down at 4,200 feet after setting 6⅝-inch casing. A derrick is up for No. 1 West Cote Blanche.

Evangeline Parish—Pine Parish Dome: The Texas Company's No. 1 Guillory is drilling around 3,615 feet.

Jeff Davis Parish: F. J. Getty's No. 1 La Casine Irri is drilling below 3,450 feet. Estropal Oil Co.'s No. 2 Le Duex is at 2,347 feet. Elton Oil Co.'s No. 1 Bullard is shut down at 2,060 feet.

St. Mary's Parish—Bristol Oil & Gas Co.'s No. 1 Breaux and the Terre Bonne Gas Co.'s No. 1 Whitman are both still idle at 3,015 and 2,650 feet, respectively.

Assumption Parish—Union Sulphur Co. abandoned No. 2 Clifton at 675 feet. A location has been made for No. 1 Parish school lands.

Estimated Gross Daily Average

The estimated gross daily average production for the week of March 5 is placed at 158,347 bbls. The estimate for each pool is as follows:

Pool—	Dy. Av.
Boling	1,825
Batson	1,675
Blue Ridge	2,310
Big Creek	4,000
Barber Hill	750
Dayton	60
Damon Mound	985
Edgerly (La.)	975
Goose Creek	7,310
Humble	4,000
Hull	17,600
High Island	650
Jennings (La.)	1,020
Lockport (La.)	2,450
Markham	350
Nash Dome	900
Orange	5,175
Orchard	45
Pierce Junction	13,925
Piedras Pintas	200
Spindletop	60,300
Saratoga	1,230
Sour Lake	6,050
South Liberty-South Dayton	4,122
Stark Dome (La.)	3,000
Vinton (La.)	5,300
Welsh-Anne La Bute (La.)	60
West Columbia	10,150
*Miscellaneous	1,920
Total	158,347

*Includes Nacogdoches, Washington and Kleberg Counties in Texas; Sweet Lake, Sulphur, Eagle Point and scattering in Louisiana.

The Spindletop Pool decreased, but this is offset by increases at Pierce Junction, Big Creek and the new Stark Pool in Calcasieu Parish.

Southwest Fields

Luling	18,390
Mirando-Laredo	14,800
Somerset	1,500
Callihan	40
Rockdale-Minerva	990
Lockhart (Lytton Springs)	2,250
Total	37,970
Grand total for week	196,317
Grand total last week	196,795
Net decrease	478

A total of 22 wells were completed during the week, of which 10 were dry and abandoned and one a salt water well. The new production aggregates 12,300 bbls. Ten wells were bailing at the close of the week.

Pierce Junction Feature

The west flank of the Pierce Junction Pool, just beyond the Houston city limits to the south, was the center of interest. The Rio Bravo Oil Co. deepened No. 3 Settegast there to 4,380 feet and it started flowing 3,600 bbls. through a three-quarter inch choke. It is a new sand on that side of the dome. The same company's No. 4 Bender was completed late in the week at 3,450 feet, flowing 3,100 bbls. W. F. Martin's No. 1 Settegast is bailing at 3,410 feet and showing gas and oil.

These completions increased the daily average to nearly 14,000 bbls., or the highest since the opening of the west side deep sands. The Rio Bravo company has between 9,000 and 10,000 bbls. of the gross output.

Rio Bravo Oil Co., which is a subsidiary of the Southern Pacific Railroad, has set casing in No. 3 Bender at 1,400 feet and has a fishing job in No. 3 T. F. at 3,675 feet. The Gulf Production Co.'s No. 2 Jones fee is at 2,090 feet and No. 1 Sanders is around 876 feet. The Marland Oil Co.'s No. 4 Prudential is drilling at 1,545 feet. M. Kouri's No. 2 Jones is below 1,455 feet. On the old east side of the dome, the Texas Exploration Co.'s No. 10 Dooley is drilling around 3,765 feet. Gulf Production Co.'s No. 20 Taylor is at 3,644 feet.

In the Blue Ridge Pool, 12 miles southwest of Houston, Humphreys Corp.'s No. 2 West-Schenck, on the south flank, was abandoned at 3,600 feet. Gulf Production Co.'s No. 8 West-Schenck will make a pumper at 3,900 feet. The Navarro Oil Co.'s Nos. 1-A and 2-A Robinson are bailing; the former at 3,400 feet and the latter at 3,225 feet. They are on the northwest flank.

Gulf Production Co.'s No. 9-B Blakely is drilling below 1,675 feet, with a location made for No. 15-C Blakely. No. 9 Schenck is drilling at 2,078 feet and No. 5 Invincible is a location.

The Rycade Petroleum Co. is preparing to set and test 26 feet of sand in No. 3 Kountz, in the Markham Pool, around 4,200 feet. It is a good-looking sand, heavily saturated, and a good well is anticipated.

In the Orange Pool, the Rex Petroleum Co.'s No. 12 Carbello is pumping 145 bbls. at 3,175 feet. The Tillery Oil Co.'s No. 2 State land, a worked-over hole, will make a pumper at 3,500 feet. Orange Petroleum Co.'s No. 8 Chesson, another workover, is pumping 20 bbls. at 3,295 feet. The Humble Oil & Refining Co.'s No. 6 Winifree is bailing at 4,000 feet.

Deepening or working over old wells constitutes the sum total of the activity there. Brownie Babbittee Oil Co.'s No. 1 McLean is deepening at 3,345 feet and the Rycade Petroleum Co. is deepening No. 2-B Cow Bayou. Texhoma Oil Co.'s No. 13 Chesson is fishing at 5,625 feet. Gulf Coast Oil Co.'s No. 5 Leon is drilling at 3,575 feet. Atlantic Oil Producing Co.'s No. 2 Moore is shut down at 3,350 feet. Gulf Production Co.'s No. 3 Granger is drilling below 4,400 feet. Rex Petroleum Co.'s No. 13 Carbello is at 1,090 feet.

Goose Creek

In the Goose Creek Pool, Gulf Coast Oil Corp.'s No. 11 Galliard, a worked-over hole, is making 40 bbls. of fluid, 50 per cent water, at 2,490 feet. The Gulf Production Co.'s No. 26 Smith is pumping 15 bbls. at 3,550 feet. The M. & B. Oil Co.'s No. 3 Scorrgea was abandoned at 2,160 feet. Gulf company's No. 13 Chapman-Bryan is bailing at 4,450 feet.

The Hull Pool came nearly being a blank this week. The Texas Company abandoned No. 1 Merchant at 2,500 feet. New work there includes a location by the Gulf company for No. 24 Morris-Phillips and the Empire Gas & Fuel Co.'s No. 24 Barngrover drilling around 1,000 feet. The Mecom Oil Co.'s No. 2 Taylor is preparing to drill deeper. W. B. Flynn's No. 2 Riviere is around 800 feet. Gulf company is deepening No. 15 Phoenix and drilling Nos. 83, 84 and 85. Also No. 19 Baldwin, below 1,300 feet.

In the Batson Pool, Gulf Production Co.'s No. 2 Cruse, on the southwest side, is bailing at 3,400 feet. Its No. 170 Wing was abandoned as a failure at 1,125 feet. East Batson Oil Co.'s No. 1 Crawford is bailing at 1,325 feet. The Texas Company's No. 3 La Jarza, on the east side of the pool, is drilling around 4,135 feet.

The Cotton Oil Co.'s No. 5 Kirby, in the Saratoga Pool, is a salt water well at 1,075 feet. Same company's No. 2 Ellis is at 655 feet. Skinner Oil Co.'s No. 2 Brooker is at 980 feet and Sun Oil Co.'s No. 173 Texas crude at 655 feet. Elizabeth Oil Co.'s No. 1 Ogden is below 735 feet.

Gulf Production Co. is setting screen in No. 3 Smith at High Island to test 25 feet of sand at 3,003 feet. No. 7 Smith is drilling around 2,300 feet. Sun Oil Co.'s No. 9-C Cade is around 2,065 feet. No. 11 Cade is fishing at 3,450 feet and No. 12 Lockhart is drilling at 1,534 feet.

On the west side of the Trinity River at South Liberty, Gulf company's No. 1 Palmer is around 4,700 feet and No. 1 Bingle at 2,565 feet. A location has been made for No. 2 Marshall fee. The Associated Oil Co.'s No. 1 Hirsch is at 1,900 feet. The Humble Oil & Refining Co.'s No. 7 Welder is drilling around 3,455 feet. On the east side of the river, The Texas Company's No. 4 Simmis is drilling at 3,656 feet and No. 7 Staiti is rigging.

Gulf company's No. 5 Jackson will make a pumper at 4,000 feet. Its No. 4 Ebberts is drilling at 4,900 feet and No. 2 Thompson is around 2,985 feet. Sun Oil Co.'s No. 1 Carpenter set casing at 4,550 feet.

Coastal Louisiana

Vacuum-Gulf's joint No. 9 Miller, in the Lockport Pool, completed at 4,375 feet, flowing 1,000 bbls. No. 8 Miller is drilling at 4,300 feet; No. 13 around 4,100 feet and No. 14 at 1,600 feet. Locations have been made for Nos. 15 and 16. No. 2 Bordages is below 5,200 feet and No. 4 around 4,655 feet. Casing was set in No. 2 Friedberg and Wolf at 4,350 feet. No. 4-A Farquhar is at 3,935 feet, with a location for No. 5.

In the Edgerly Pool, Rex Petroleum Co.'s No. 5 Hunter is at 1,290 feet. C. M. Crotty's No. 12 Lilliard will be deepened. Derricks are up for Gulf Refining Co.'s No. 41 Bright-Penn and Hercules Oil Co.'s No. 1 Paraffine.

The Texas Company abandoned No. 27 Gray, in the Vinton Pool, at 2,425 feet.

In the Jennings Pool, The Texas Company's No. 1 Rayne is drilling around 4,325 feet and No. 103 Latrielle at 2,200 feet. The Mantan Oil Co.'s No. 2 Pierce is at 1,135 feet. Port City Oil Co.'s No. 2 SFS is around 1,700 feet. Derricks are up for the same company's No. 3 SFS, Jennings Petroleum Co.'s No. 5 Crowley and Bolyard Oil Co.'s No. 4.

SOUTHWEST TEXAS FIELDS

(Continued from Page 59)

Laredo territory to the lower Rio Grande Valley to furnish gas to a dozen or more thriving cities. Mr. Morgan is starting drilling at once. He is now making locations and will have two rigs running in a short time. In company with Barkley-Meadows he is spudding in one test on Survey 323 at the north end of the Cole Field on one of the Gulf leases.

Cole Gas Field—Duval County

Magnolia Petroleum Co.'s No. 1 Harper, Survey 323, Block 6, located 200 feet to east and south lines, is drilling at 150 feet. Cole Petroleum Co.'s No. 23 Benavides, Survey 8, Block 9, located 150 feet to southwest and northwest lines, is drilling at 3,400 feet; No. 28 Benavides, Survey 13, Block 15, located 450 feet to northwest lines and 1,050 to northeast lines, tested salt water at 3,972 to 4,108 feet and is now drilling at 4,120 feet; No. 32 Benavides, Survey 15, Block 2, located 660 feet to northwest and northeast lines, has a sand at 1,649-52 feet; No. 33 Benavides, Survey 15, Block 14, located 660 feet to northwest and northeast lines, is drilling at 200 feet, and location is being made by the Cole Petroleum Co. for Nos. 34 and 35 Benavides, which are to offset the gasser brought in by the Associated Oil Co. in Block 6 of the A. M. Bruni land. Cole Petroleum Co. is also making location for No. 36 Benavides, across the county line in Webb in Survey 411, Block 10. Barkley-Meadows-Morgan-Gulf's No. 1 King-Harper, Survey 323, located 150 feet to northwest and southwest lines, has derrick up. This test is just north of the new gasser brought in the past week by the Cin-Tex Petroleum Co.'s No. 1 Willman in Survey 354. Houston Oil Co.'s No. 7 Benavides in Survey 10, Block 16, located 155 feet to southeast and southwest lines, is rigging up. Houston Oil-Sun Oil are making location for No. 4 "B" Benavides, also for No. 5 "B" Benavides. Houston Oil-Tyng's No. 2 R. Benavides, Survey 15, Block 10, located 155 feet to southeast and southwest lines, has set surface casing at 100 feet.

Piedras Pintas Dome

Gulf Production Co.'s No. 1 Tinney, Survey 8, located 800 feet to south line and 100 feet to west line, at 3,650 feet had 250 feet of oil in hole, but only a little oil was bailed, and liner is being pulled to drill deeper.

O'Hern & Seacord Pool

O'Hern & Seacord have moved tools back to deepen No. 1 Benavides, Survey 174, Block 12, discovery well of the pool, which at 1,765 feet came in last August making 5,000,000 feet of wet gas and is now drilling at 2,000 feet.

O. W. Killam has not yet announced location for his No. 1 Bruni to be in Survey 585, 1 mile southwest of the new pool.

Randado Pool—Jim Hogg County

Grayburg Oil Co.'s No. 15 Weil, Survey 81, Block 9, located 150 feet to east line and 750 feet to south line, is rigging up. Magnolia Petroleum Co.'s No. 18 Merchants State Bank, Survey 415, located 1,850 feet to west line and 750 feet to north line, is rigging up; No. 20 Merchants State Bank, same survey, 450 feet to west line and 700 feet to north line, has derrick up; No. 20 de la Garza, Survey 291, Block 7, located 450 feet to southwest lines, is coring at 1,244 feet. Livingston-Ritchson's No. 1 Palacious, Survey 287, Block 18, located 150 feet to northwest lines and 2,000 feet east of the line of production, is drilling at 1,000 feet. Simms Oil Co. has made location for No. 12 Weil, Survey 81, Block 8, located 150 feet to south line and 750 feet to east line.

Henne, Winch & Fariss Field

Magnolia Petroleum Co.'s No. 21 Martinez, Survey 276, located 1,400 feet to east line and 2,150 feet to north line, which has been waiting some time on rig at 2,048 feet, has had the casing collapse: No. 25 Martinez, same survey, 1,600 feet to east line and 2,400 feet to north line, has set casing at 2,033 feet; No. 26 Martinez, same survey, 2,050 feet to east line and 2,700 feet to west line, has derrick up; No. 34 Martinez, Block 15, located 350 feet to north line and 450 feet to west line, has derrick up; and in the same block and survey, 400 feet to west line and 150 feet to south line, derrick is up for No. 35 Martinez.

Kitselman & St. Albans

Edward St. Albans' No. 5 Lopez, Share 1, Block 7, located 1,100 feet to west line and 150 feet to south line, has a sand at 2,138 feet and set casing at 2,134 feet; derrick is up for No. 6 Lopez in same share and block at 500 feet to south line and 450 feet to east line. K. & S. Corp. is rigging up for No. 57 Holbien, Block 40 of Share 7, at 330 feet to northeast lines. Associated Oil Co.'s No. 3 Martinez, Share 1, Block 18, lo-

The G-R Mineral Seal Oil Heat Exchanger

THE highest possible rate of heat transfer is secured in the G-R Mineral Seal Oil Heat Exchanger by the strictly countercurrent flow of lean and rich oils.

Besides this practical service advantage, its twin arrangement makes it exceptionally compact and easy to inspect, clean, and transport to new locations if desired.

All oil connections are at the same end to simplify piping, and the construction eliminates expansion strains and likelihood of leakage or breakage.

These advantages and the features of construction of the G-R Mineral Seal Oil Heat Exchanger are explained in leaflet which will be sent on request.

THE GRISCOM-RUSSELL COMPANY

285 Madison Ave., New York

Philadelphia	Chicago	St. Louis	San Francisco
Boston	Detroit	New Orleans	Los Angeles
Rochester	Cleveland	Dallas	Seattle
Pittsburgh	Milwaukee	Houston	Salt Lake City
Columbus	Minneapolis	Atlanta	Tulsa
Indianapolis	Kansas City	Charlotte	Denver

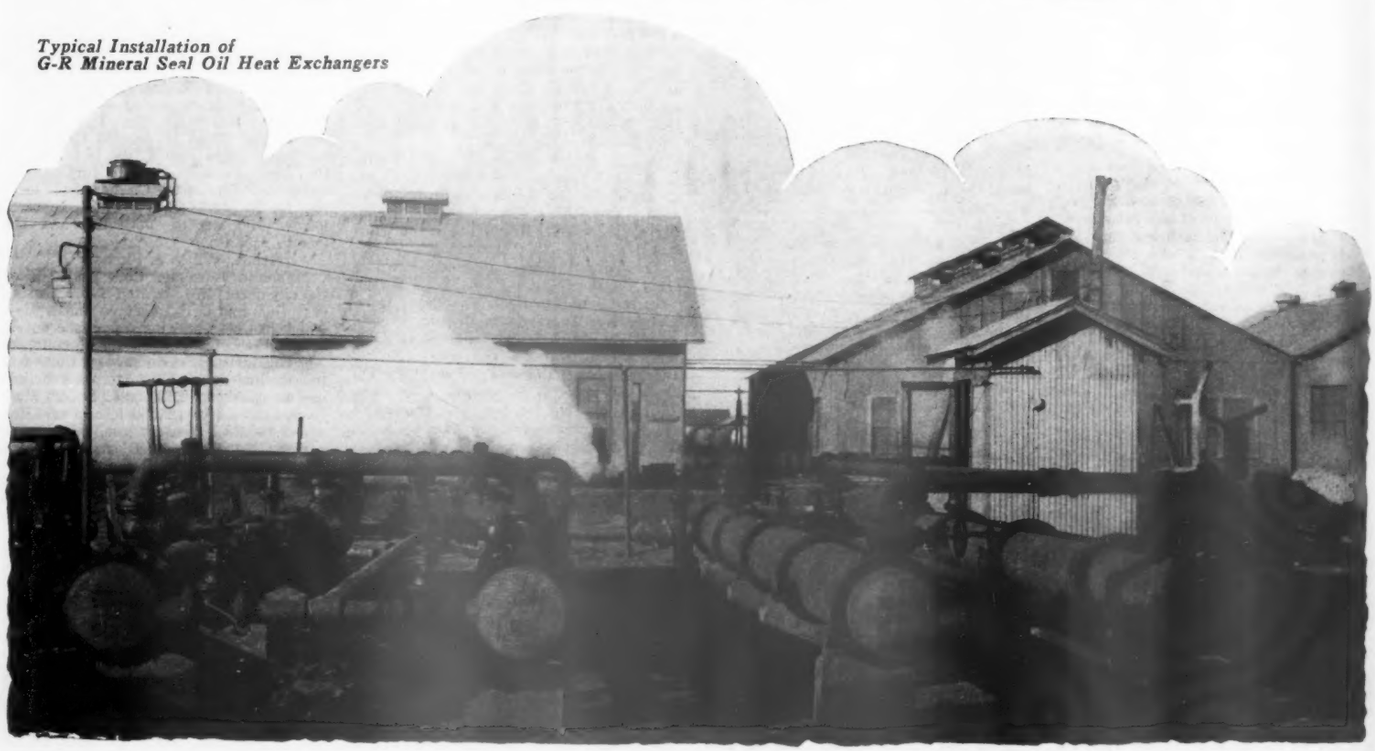
For Canada: Riley Engineering and Supply Co., Ltd., Toronto.

Griscom-Russell

Heat Transfer Apparatus

HEAT EXCHANGERS
CONDENSERS
Sub-cooling—Partial—Reflux
Shell-and-Tube, Atmospheric, and Condenser Box Types
COOLERS
Liquid—Gas—Jacket Water
Shell-and-Tube, Atmospheric, and Condenser Box Types
OIL HEATERS
LEVEL CONTROLLERS

Typical Installation of G-R Mineral Seal Oil Heat Exchangers



cated 800 feet to west line and 150 feet to north line, has been spudded in. Edward St. Albans' No. 1 Holbien, Block 38, Hogg Ridge, Share 3, has been spudded in.

Alworth Pool

Dauchy-Maddox and Harvey's No. 1 M. Garcia, Survey 281, Block 5, located 150 feet to north and southeast lines, is standing 1,393 feet. Magnolia Petroleum Co.'s No. 17 Merchants State Bank, Survey 236, located 150 feet to southwest lines, at 1,041 feet made 5 bbls. of oil and some salt water; and derrick is being skidded over to 450 feet to south line and 150 feet to west line for No. 19 Merchants State Bank.

Schott Pool—Webb County

Jones and others' No. 3 Garcia, north portion Survey 463, located 150 feet to northeast lines, is moving on. Magnolia Petroleum Co.'s No. 6 Garcia, Survey 58, located 1,990 feet to west line and 440 feet to north line, is drilling at 200 feet; No. 7 Garcia, Survey 592, Block 11, at 550 feet to west line and 150 feet to north line, is running tubing and rods with total depth 1,980 feet.

Aviator or Bruni Tracts

George M. Ball's No. 4 Puig, Block 74, which has been milling out tools lost in the hole, total depth 3,812 feet, has hole cleaned ready to swab. Killam-Maddox's No. 1 Bruni, Block 65, located 1,170 feet to south line and 150 feet to west line, is drilling at 1,400 feet. Crown Central Petroleum Corp.'s No. 21 Bruni, Block 44, located 510 feet to east line and 770 feet to north line, at 1,734 feet is standing waiting on rig. Sun Oil Co.'s No. 13 Bruni, east half of Block 45 at 1,650 feet to north line and 200 feet to west line, has a sand at 1,669-77 feet. Derrick is up for No. 1 Bruni, in Block 41, at 150 feet to northwest lines, being drilled by Neal and others.

Mirando Valley Pool

J. L. Johnson and others' No. 1 Anderson, Survey 2,363, Block 6, located 150 feet to southwest lines, is drilling at 500 feet. R. F. Duggan's No. 1 E. Garcia, Survey 608, Block 2, located 150 feet to southeast lines, has cored sand at 1,922 feet. Crown Central Petroleum Corp.'s No. 10 Garcia, Survey 606, Block 56, located 150 feet to west line and 110 feet to north line, is drilling at 4,700 feet; and No. 15 Garcia, in Block 26, at 200 feet to west line and 150 feet to north line, has been spudded in.

Carolina-Texas Fie'd

Associated Oil Co.'s No. 3-B Webster, SE NW NW Survey 684, located 250 feet to north line and 150 feet to east line, at 2,604 feet is standing with hole filled with mud. Hazlitt-Simmons' No. 1 de la Garza, Survey 335, Block 11, located 150 feet to northwest lines, has a sand at 2,970-77 feet. M. & N. Drilling Co.'s No. 1 Vela, Survey 1,012, Block 12, located 200 feet to northeast and southeast lines, is drilling at 2,950 feet. T. P. Morgan's No. 1 de la Garza, Survey 335, Block 23, located 150 feet to southeast lines, is milling out liner. Houston Oil Co. is making location for No. 1 "A" Barnsley in Survey 268, Block 14. Barnsley-Chicago Syndicate's No. 1 de la Garza, Survey 335, Block 19, is drilling at 2,000 feet. Mims & Pitman trustees' No. 1 de la Garza, Survey 37, located 870 feet to north line and 1,170 feet to west line, is to spud in at once.

Mirando Valley Pool—Zapata County

The Texas Company's No. 4 Jennings, Cerrito Blanco Grant, located 12,360 feet to southwest line and 6,945 feet to southeast lines, below 1,400 feet tested 20,000,000 feet gas through Halliburton tester.

Refugio Field—Refugio County

Houston Gulf Gas Co.'s No. 1 Breeding, Refugio Town Tracts Lot No. 2, located 450 feet to south line and 750 feet to west line, is drilling; R. Lambert's No. 2, Survey 2, Block 7, located 660 feet to southeast lines, is drilling at 1,300 feet. Houston Oil Co.'s No. 9 Heard, Refugio Survey, 1,014 feet south of No. 8, is ready to spud in. William F. Morgan's No. 1 Shelly, Block 144, is moving on; and his No. 1 Rose Rogers, Powers Survey, at the fork of the Middle and Blanco Creeks, is testing.

Rockdale Field—Milam County

Rockdale Development Co. has spudded in No. 3 Lorenz. Bartlett Brothers have made location for No. 3 Kevil. Groneman Brothers' No. 1 Chandler, offsetting No. 1 Lorenz, at 1,385 feet made 20 bbls. Noack & Laning are erecting derrick for No. 8 Baldridge in Chambers Survey, 300 feet east of No. 3, and have made location for No. 9 Baldridge in the same survey, 300 feet east of No. 6. Carl Fogle's No. 1 Watson, Davilla Survey, 150 feet to west line and 450 feet to south line, is drilling. E. H. Noack's No. 2 Phillips Perry is drilling at 800 feet. Baggett Brothers' No. 1 Mrs. Tom Fowler is shut down in the Eag'e Ford. Cranfil & Reynolds are moving in rig for No. 1 in the Davilla Survey. Clear Lake Oil Co.'s No. 1 Arnold, in the southern extension, is shut down due to cave-in at 350 feet. Elbert Williams' No. 1 Bartlett, extreme western extension, has spudded in.

Kingsville Field—Kleberg County

A. & M. Weil have made location for No. 1 Clark and others, Section 40, Block 12, 300 feet to northwest lines. A. C. Erwin's No. 1 Kivlin (fee), Section 50, Block 7, located 660 feet to southeast lines, is shut down at 650 feet. Humble Oil & Refining Co.'s No. 1-B Dennett, Section 38, Block 19, completed as an oil well at 2,280 feet, is being deepened. J. E. Walsh has derrick up for No. 1 Flato in Block 29, King land. Humble Oil & Refining Co.'s No. 3 Kleberg trustee, Block 1, Section 40, located 150 feet to northwest lines, has spudded in; No. 1 Kleberg trustee, Section 40, Block 8, located 150 feet to northeast lines, in on a sand at 2,827 feet and is setting liner; No. 3 Flato-Clarke, Section 40, Block 9, located 150 feet to northeast lines, has choked itself in, and casing that was badly cut by the sand is being removed and well will be mudded off and deepened.

Refugio Gas Field—Refugio County

Houston Gulf Gas Co.'s No. 1 Breeding, Town Tracts No. 2, located 450 feet to south line and 750 feet to west line, is drilling: No. 2 R. Lambert, Survey 2, Block 7, located 660 feet to southeast lines, is drilling at 1,300 feet. Houston Oil Co.'s No. 9 Heard, Refugio Survey, 1,014 feet south of No. 8, has made location. William F. Morgan's No. 1 Shelly, Block 144, is moving on; No. 1 Rose Rogers, Powers Survey, at fork of Middle and Blanco Creek, is testing.

Luling Field—Caldwell County

Magnolia Petroleum Co.'s No. 16 Alf Mercer, M. Caldwell Survey, 300 feet southeast of No. 15, at around 2,100 feet made 80 bbls.

ROCKY MOUNTAIN AREA

(Continued from Page 63)

Frank Shafer well, is being drilled jointly by the Midwest Refining Co. and the Utah Southern Oil Co., is at 5,274 feet and is the deepest well ever drilled in the Moab district. The hole is now in rock salt.

The Snowden & McSweeney No. 1 on the Cane Creek Dome, located by Geologist Prommell, is about 500 feet and making hole fast after having had some trouble with an offset. This well will be of interest to the oil operators when it reaches a depth of about 2,000 feet, as it is located on the same structure as the discovery well and should find the pay about 2,000 feet that brought the Moab district into the limelight.

The wildcat being drilled by the Midwest Refining Co. on the Elk Ridge structure is at 1,300 feet and preparing to run 12½-inch pipe. After this is set, the work is expected to go faster.

The wildcat drilling near Moab, known as the Big Six well, is running the last of a string of 3½-inch pipe to the bottom of the hole at 3,053 feet. If this well finds some more water at different levels it will have to use a darning needle to complete.

On the Cedar Mesa, the Utah Southern Oil Co. and the General Petroleum Co. have the hole at 1,770 feet in a black lime and a showing of sulphur gas. This well also had a sand from 1,562-72 feet that is making 250,000 feet of gas daily and the gas is oily in smell.

The Utah Petroleum Co., on the Gibson Dome, has cemented the 12½-inch casing at 1,370 feet and the tools are digging again. The same firm has the wildcat on the Hulkito Dome at 1,500 feet and making hole.

The Crystal Carbon Co., whose plant is located at Cisco, Utah, is now shipping two carloads weekly of carbon black to the East.

Montana Development

Two applications filed with the Montana Railroad Commission, asking for lower freight rates on oil from the Kevin Sunburst Field and alleging discrimination on the part of the Chicago, Milwaukee & St. Paul in the one case and the Great Northern in the other, were dismissed by the commission after a comparison of the present tariffs with charges on shipments to other points.

The California Petroleum Corp.'s No. 3 Moe, in the Kevin-Sunburst Field, will be given a test. The hole filled up with oil after penetrating the sand to a depth of only 2 feet, and the well flowed when agitated. As soon as tankage can be provided the well will be given a chance to show what it can do. There has not been much drilling done in this locality, and if the well proves as good as indicated there will be much activity on surrounding leases. In the same field the Kobes-McCormick No. 2 Byrne reports 600 feet of oil in the hole from the Sunburst sand. The well is shut down on top of the Ellis.

The Carter Oil Co.'s test on the Johnson ranch south of Shelby, on the Marias River, struck a water flow at a depth of 200 feet, and drilling is suspended while the water is cased off. This well was started with a 20-inch hole, but on account of so much quick sand it has been necessary to case the hole, reducing its size sooner than was originally planned. The intention is to make a thorough test of all the possibly oil bearing sands of the structure.

The Prairie Oil & Gas Co. is shipping in material for a test on the Hunter lease near Galata. The structure lies in Township 33 North, Ranges 2 and 3 East. It is planned to make a 4,000-foot test if necessary.

In the Lake Basin Field, the Prairie has resumed operations after being shut down all winter. In the same field, the Record Petroleum Co. has started its No. 3 Diamond. The Linco Oil Co. well in Section 25-1-21 in the Lake Basin Field is reported on top of the Dakota sand.

Field Runs

Salt Creek	38,850
Teapot	1,040
Big Muddy	2,800
Grass Creek	2,880
Elk Basin	960
Greybull	20
Rock River	2,930
Rex Lake	170
Lance Creek	740
La Barge	300
Poison Spider	200
Osage	350
Hamilton Dome	1,160
Lander	365
Byron	40
Lost Soldier	3,770
Simpson Ridge	50
Ferris	80
Hogback	820
Cat Creek	2,360
Lake Basin	190
Kevin Sunburst	11,000
Florence	600
Rattlesnake	2,275
Moffat	2,690
Tow Creek	805
Fort Collins	3,815
Boulder	25
Rangeley	100
Artesia	2,000
Table Mesa	445
Miscellaneous	50
Total	83,870

OKLAHOMA FIELDS

(Continued from Page 52)

SE SW, Section 23-9-6, flowed 5,145 bbls. by the air method, from the Wilcox sand at 4,067-4,115 feet. Amerada Petroleum Corp.'s No. 2 Killingsworth "B," NW cor. SW NE, Section 23-9-6, swabbed 190 bbls. from the Wilcox horizon, 3,973-4,019 feet. Kingwood Oil Co. and Roxana Petroleum Corp.'s No. 1 Harjo, SE cor. Section 22-9-6, made 838 bbls. from the Wilcox sand at 4,150-83 feet. Roxana Petroleum Corp.'s No. 1 Harbor, SE cor. SW SE, Section 22-9-6, had an initial production of 1,394 bbls. from the Wilcox sand at 4,010-20 feet. Mid-Continent Petroleum Corp.'s No. 10 Rentie, NE cor. NW SE, Section 14-9-6, found the top of the Wilcox sand at 4,294 feet and drilled to 4,300 feet where water was encountered and the hole plugged back to 4,265 feet and shot with 5 quarts after which it did 90 bbls. No. 3 Rentie, SW cor. SE SE, Section 14-9-6, was given a shot of 15 quarts in the Wilcox sand at 4,276-81 feet and made 480 bbls.

Carter Oil Co.'s No. 3 Knapp, NW cor. SW SW, Section 13-9-6, made 858 bbls. from the Wilcox sand at 4,189-4,218 feet. No. 1 Bora, C SE SE, Section 27-8-8, is a rig on the ground, was abandoned. No. 1 D. Davis, SW cor. NW, Section 10-8-7, had a hole full of water in the Wilcox sand at 4,305-10 feet and is abandoned. The Texas Company's No. 5 Jackson, NE cor. NW, Section 4-10-8, lost the hole at 3,453 feet and was abandoned. Transcontinental Oil Co.'s No. 5 Coppage, SE cor. NE SE, Section 22-7-7, swabbed 75 bbls. from sand at 2,112-22 feet. Searight and others' No. 1 Youngblood, NE cor. SE SW, Section 33-10-6, is making 1,500,000 feet of gas from sand topped at 4,045 feet. McCullough Oil Co. made location for No. 4 Bowlegs, SE cor. NW NW, Section 22-8-6. Location for No. 3 Bowlegs was made in SW cor. NW NW, Section 22-8-6. Location for No. 2 Bowlegs was made in NW cor. Section 22-8-6. Location for No. 1 Bowlegs, NE cor. NW NW, Section 22-8-6, was also made.

The Prairie Oil & Gas Co.'s No. 4 Gross, NW cor. SW NW, Section 25-9-6, swabbed 250 bbls. from the Wilcox sand at 4,315-20 feet. No. 5 Gross, NE cor. SE SE, Section 27-9-6, made 550 bbls. on the swab from the Wilcox sand at 4,069-82 feet. No. 3 Washburn, NW cor. S half NW, Section 34-10-6, was abandoned at 2,089 feet.

Gypsy Oil Co. made location for No. 1 Disey, SW cor. NW, Section 4-8-6. Pure Oil Co. has made location for No. 5 Strothers "B," SW cor. NW, Section 36-9-6. Rig is being built for No. 3 Strothers "B," SW cor. NW NW, Section 36-9-6. The rig is also being built for No. 4 Strothers "B," NW cor. SW NW of the same section. Gypsy Oil Co. is building the rig for No. 4 Butler, SE cor. NE NE, Section 35-9-6. Atlantic Oil Producing Co. and Independent Oil & Gas Co. made location for No. 3 J. Cudjo, SW cor. NW SE, Section 35-9-6. Carter Oil Co. has the rig on the ground for No. 6 Lukes, SW cor. SE NE, Section 27-9-6. Location was made for No. 4 Lukes, SE cor. NE NE, Section 27-9-6, and location for No. 5 Lukes was made in the NE cor. SE NE, Section 27-9-6, and location for No. 5 Lukes was made in the NE cor. SE NE Section 27-9-6. Pure Oil Co. is putting up the rig for No. 2 Aldridge, NE cor. SE NW, Section 3-9-6. Mid-Continent Petroleum Corp. has made location for No. 2 Davis, SE cor. SW, Section 33-10-6. The Texas Company has made location for No. 5-A Jackson, NE cor. NW, Section 4-10-8, to be a twin to No. 5. Oklavania Oil Co. and Carter Oil Co. are digging the cellar for No. 2 Island, SE cor. NW SE, Section 18-9-8. Mid-Continent Petroleum Corp. made location for No. 1 Bowlegs, NE cor. SW, Section 22-8-6. Magnolia Petroleum Co. made location for No. 1 Grisso, SE cor. NE, Section 9-8-8.

Stephens County

Skelly Oil Co.'s No. 2 Pielsticker, NW cor. SE NE, Section 5-2s-8w, has been abandoned at 2,757 feet. Carter Oil Co.'s No. 4 Blaydes, CEL SE NE, Section 32-1s-8w, was deepened from 1,896 feet and completed for 30 bbls. in sand at 2,198-2,208 feet and 2,248-58 feet. Beard & Cobb's No. 5 Skelly-Brigham, NW cor. SW NW SW, Section 30-1s-8w, is pumping 15 bbls. from sand at 2,140-52 feet. Pearce & Brown's No. 2 Taliaferro, C N half SE Section 27-1s-8w, an old well, is drilling deeper at 1,740 feet.

Tulsa County

Minshall and others' No. 1 Fife, NW cor. NE NE, Section 21-19-11, is dry and abandoned in the Turkey Mountain sand at 2,262 feet. Glidden Oil Corp.'s No. 1 Fife, SW cor. NW SE, Section 15-19-11,

was brought in as a 280-bbl. producer in the Hominy sand at 2,093-2,139 feet. A machine is on the ground for No. 2 S. Fife, NE cor. SE NE SW, Section 15-19-11. A machine has also been moved out for No. 4-A Fife, CNL SW SE, Section 15-19-11. Superior Oil Corp.'s No. 7 Burnett, C NE NW, Section 7-19-10, was completed for 10 bbls. in the Red Fork sand at 2,052-62 feet after a shot of 80 quarts. Holmes and others have a machine at the location for No. 2 Bell, C SW NW, Section 14-19-10. Simms Oil Co.'s No. 1 Hoyer, CNL SE SW, Section 10-19-10, is spudding. Ed Lee and others' No. 1 Unallotted, CWL NE NW, Section 2-19-9, an old well, has been drilled to the Red Fork sand at 1,935-73 feet, shot with 90 quarts and is cleaning out.

Wagoner County

C. Brown and others are rigging up No. 1 E. Roberts, SW cor. NW NW, Section 29-16-16. C. W. Gillett has the machine on the ground for No. 2 Reynolds, SE cor. SW NW, Section 7-16-15. Cartwright & Kyle have the machine at the location for No. 3 Davis, C NE NW, Section 2-18-15.

Carter County

Magnolia Petroleum Co. has built rig for No. 1-B J. Pollock, SE cor. NW SE, Section 14-1s-3w. Humble Oil & Refining Co. has the rig up for No. 13 Jordan, NE cor. NW NW, Section 19-1s-3w. Magnolia Petroleum Co. is erecting the rig for No. 4 W. Hardin, NW cor. SW, Section 19-1s-3w. Humble Oil & Refining Co. is putting up the rig for No. 5 Calvery, NE cor. SW SW, Section 2-2s-3w. Magnolia Petroleum Co.'s No. 8 Adams, SE cor. Section 3-2s-3w, had broken sand at 3,012-30 feet and 3,080-85 feet, and completed for 95 bbls. No. 1 Zachary, NE cor. SE, Section 21-2s-3w, is making 57 bbls. from a broken sand at 2,105-12 feet. No. 1 Noble, NE cor. SW SE, Section 10-2s-2w, had a show of oil in sand at 1,075-83 feet but was abandoned at 3,640 feet. Roxana Petroleum Corp.'s No. 1 Pierce, SE cor. NW SE, Section 7-2s-2w, an old well being deepened, is now drilling at 2,200 feet. The well was formerly known as No. 1 Tucker-Lively.

Garvin County

The Texas Company has built the rig for No. 14 Derdeyn, NW cor. SE NE, Section 17-1-3w. Magnolia Petroleum Co.'s No. 25 Cowan, SW cor. SE NW, Section 15-1-3w, has been completed for 3,000,000 feet of gas in sand at 1,456-62 feet.

Marshall County

Bilbo and others' No. 1 Chapman, NE cor. NW NE, Section 11-7s-4, is spudding.

KANSAS FIELDS

(Continued from Page 52)

NW, Section 11-22-11, has been abandoned without making any hole. Empire Gas & Fuel Co.'s No. 10 Hind, SW cor. NE SW, Section 14-22-11, was shot with 40 quarts in sand 1,897-1,909 feet and made 100 bbls. Schwartz and others' No. 1 Schultz, SW cor. Section 13-22-12, is dry and abandoned at 2,260 feet. Crocker and others made location for No. 1 Schwab, SW cor. SE SW, Section 36-22-12. Skelly Oil Co.'s No. 2 Lue, SW cor. NW NE, Section 32-22-13, is dry at 1,770 feet. Leonard Petroleum Co. and others' No. 1 Culver, NE cor. SW Section 8-23-10, is a dry hole at 2,489 feet. Ritchey & Moore's No. 8 Seeley, C SW SE, Section 5-23-11, is drilling at 300 feet. Empire Gas & Fuel Co. has the rig up for No. 7 Edwards, SW cor. NW NE, Section 21-23-11. Connell Oil Co. made the location for No. 1 Short, SW cor. NE, Section 34-23-11. Mathews and others' No. 1 Martin, SW cor. SE, Section 8-23-12, has been abandoned at 2,010 feet. Gore & Skelly Oil Co.'s No. 2 Inthurm, NE cor. SE NE SW, Section 4-23-13 is a 10-bbl. well after a shot of 60 quarts in sand 1,771-81 feet. Mid-Kansas Oil & Gas Co.'s No. 1 Stour, NW cor. SW NE, Section 6-23-13, is dry at 2,186 feet. Simmons & Rhodes made the location for No. 1 Short, NE cor. SW, Section 2-24-11. Sharpless and others made location for No. 1 Kulander, SW cor. NW, Section 6-24-13. Farrell and others have built the rig for No. 1 Keller, SW cor NE, Section 31-25-10. Beacon Oil Co.'s No. 2 Life, NW cor. SE SW, Section 13-26-9, is rigging up. Brown & Emerson's No. 1 Hughes, SW cor. Section 16-26-11, is dry and abandoned at 1,905 feet. Marshall and others' No. 1 Hanson, NE cor. SW NE Section 25-27-10, an old well deepened to 2,115 feet, has been abandoned. McCullough and others' No. 1 Schultz, NW cor. Lot 2, Section 2-28-11, has a hole full of water in sand 2,240-43 feet.

Harper County

Merritt and others' location for No. 1 Thompson, NE cor. Section 24-32-7, has been abandoned.

Harvey County

Stalnaker and others abandoned the location for No. 1 Godfrey, NE cor. NW, Section 19-22-2e.

Lyon County

Ritchey & Moore's No. 2 Bradfield, SE cor. SW NE, Section 25-21-10, shot 120 quarts in sand 2,205-56 feet and made 25 bbls. Theta Oil Co.'s No. 8 Jones, SE cor. NW NW, Section 30-21-10, is producing 10 bbls. from sand 2,242-95 feet after shooting 100 quarts.

Marion County

Skow Brothers and others made location for No. 1 Williams, C NE SW, Section 4-17-4. Harwood, Winters and others made locat on for No. 1 Cowman, NW cor. SW NW, Section 12-17-4. Frank and others' No. 1 Hazineck, SW cor. NW, Section 22-17-4, is producing 25 bbls. from sand 2,373-96 feet. Empire Gas & Fuel Co. made location for No. 1 Lehl, NW cor. NE, Section 13-20-4. Sheedy and others have built the rig for No. 2 Berry, NW cor. SE SW, Section 13-21-4.

Morris County

Nicolls and others made location for No. 2 Hammer, C NE NW, Section 14-16-7.

Reno County

Skelly Oil Co. & Hartman & Skaer's No. 1 Smith, C SW, Section 24-24-8w, has been completed for 150 bbls. from sand 3,545-49 feet.

Russell County

Krueger and others' No. 1 Pospishal, NW cor. SE SE, Section 13-11-13w, is dry at 3,615 feet. Derby Oil Co. and others' No. 5 Dodge, SE cor. SW NW, Section 32-11-15w, made 125 bbls. from sand 2,683-92 feet.

Sumner County

Champlin Oil & Refining Co.'s No. 1 La Force, SE cor. SW, cor. SW, Section 9-30-1w, is a dry hole at 3,572 feet. Phil-Mac Oil Co.'s No. 1 Alter, NW cor. Section 30-30-2e, has been abandoned with a hole full of water in the Siliceous lime 3,680-3,710 feet. Derby Oil Co.'s No. 1 Reitz, NE cor. NW SW, Section 25-31-2e, was shot with 100 quarts and produced 960 bbls. from sand 1,817-92 feet.

Woodson County

Schometus and others made location for No. 1 Collins, NW cor. Section 30-23-14. Skelly Oil Co.'s No. 2 Daniels, CWL NE SW, Section 13-26-14, is dry at 1,398 feet.

E. G. SEUBERT NEW PRESIDENT OF INDIANA

(Continued from Page 39)

enthusiasm, or lack of it, among its employes, and it has therefore put in force a policy of dealing with employes on a basis of payment of better than a living wage, on a foundation of equity, justice equal opportunity and the guarantee of free speech without prejudice in seeking redress of wrongs, either real or fancied. This has been effected through our industrial relations plan, with the operation of which we are more than satisfied.

The year 1926 witnessed the successful culmination of the first employes' stock purchasing plan, 15,325 employes having received 384,638 shares of stock of the company, which they had purchased on the installment plan over a 5-year period, the company having added 50 cents to every dollar invested by the employes. The benefits to the company from employe ownership of stock are already becoming apparent. The second employes' stock purchasing plan, which terminates in March, 1929, is now in operation, with 17,183 employes participating.

We still have in effect the annuity plan, under which employes who have reached the age of 65 years or have become incapacitated for work after a certain period, are retired on pensions, and the death benefits plan. These plans have been most efficacious in upbuilding loyalty and enthusiasm among employes.

Increased Earnings

The annual statement of the company follows:

In 1926 the Standard Oil Co. of Indiana continued to show increased earnings. This we attribute, aside from efficiency of management, to the loyalty and enthusiasm of our employes, to the intimate cooperation which exists between them and the management, to the wisdom of the stockholders in granting certain benefits which have encouraged this high morale, and finally, to an increasing understanding among the people of the Middle West

Robert H. McElroy

of the real service which this corporation gives to the community; an understanding which we have sought to spread and augment through the medium of suitable advertising and personal effort.

The company's balance sheet for 1926 together with that for 1925, for purposes of comparison, follows:

Assets	Dec. 31, '26	Dec. 31, '25
Real Estate	$ 35,789,713	$ 32,557,542
Plant Less Depreciation	116,290,029	106,730,982
Personal Property	2,528,344	2,768,546
Investments in other companies	129,894,095	129,762,222
Merchandise	71,302,199	66,089,705
Accounts receivable	24,392,931	20,950,645
Cash, Government Securities and Investments	66,299,552	47,200,254
Total	$446,496,863	$406,059,896
Liabilities—	Dec. 31, '26	Dec. 31, '25
Capital Stock	$228,415,463	$226,322,708
Capital Surplus	66,113,439	63,095,042
Surplus	108,307,075	78,966,092
Accounts Payable	27,696,604	23,388,799
Reserves	15,964,282	14,287,255
Total	$446,496,863	$406,059,896

Consolidated Profits

The consolidated net profit of the company including its equity in the earnings of the Midwest Refining Co. and the Dixie Oil Co., after reserves for taxes and with all other charges written off, amounted to $63,471,257 in 1926 compared with $56,861,873 for 1925. This, however, is not shown by the foregoing formal balance sheet of the Standard Oil Co. of Indiana as that takes into account only dividends actually received from subsidiary and associated companies and does not deal with the undivided earned income and surplus of those corporations in which this company has an equity in proportion to its ownership of stock therein.

Analysis of Statement

The net earnings, before taxes, of the Standard Oil Co. of Indiana, including dividends received from subsidiary or associated companies, was $62,598,764 in 1926 compared with $60,532,648 in 1925, an increase of $2,066,116. Net earnings, after a reserve for taxes of $7,500,000 was $55,098,764 for 1926 compared with $52,932,648 for 1925.

This is equal to an earning of $6.05 a share on each share of outstanding stock, compared with $5.85 a share the previous year. It represents a profit of 13.68 per cent on the capital invested duly depreciated, which at the close of 1926 business was $402,835,977, compared with $368,383,842 at the end of 1925. This earning of 13.68 per cent is not at all excessive in view of the extremely hazardous nature of the petroleum business. In complete actuality, the percentage of profit is even somewhat smaller for the stated invested capital of $446,496,863, is less than the true investment, due to the fact that this company's investments in other companies, which the balance sheet shows as $129,894,095, is, of necessity, figured on a basis of cost to this company of the stock held in these companies and not on a basis of its present book or market value, which is very considerably greater. Figured on the latter basis, the actual invested capital of the Standard Oil Co. of Indiana, duly depreciated is much in excess of the $446,496,863, shown by the formal balance sheet.

While net earnings were larger in 1926 than in 1925, or in any other year, the amount carried to surplus at the close of 1926, amounting to $23,222,027, was less than at the close of 1925, when $30,411,010, was placed in the surplus account. This was due to the fact that since March 15, 1926, the company has paid quarterly an extra dividend of 25 cents a share in addition to the regular quarterly dividend of 62½ cents, resulting in an increase of $9,355,099 in dividends paid during 1926, compared with 1925, when they totaled $22,521,638, as against $31,876,737 for 1926.

The company ended the year with a surplus of $108,307,075, compared with $78,966,092 at the close of 1925, showing an increment of $6,118,955 through adjustments of surplus in prior years, in addition to the $23,222,027, carried to surplus at the close of business for 1926. The number of shares now outstanding is 9,136,618, a slight increase over 9,052,908 a year ago.

Inventory and Cash Reserve

It will be noted that the company is carrying the largest inventory in its history, the value of the crude oil and manufactured petroleum products on hand being estimated at $71,302,199, compared with $66,089,705 in 1925, the company's largest previous inventory. This may be accepted as an indication that your board considers the outlook for business during 1927 to be favorable. Our inventory, however, is adequately balanced by our cash reserve, so that while carrying the largest inventory in its history in anticipation of thriving business in 1927, the company at the same time is fully protected against any possible unforeseen condition which might disturb the petroleum industry or the economic structure of the nation, by the fact that it is carrying in cash government securities and investments a total of $66,229,552, representing the largest protective financial reserve in its history. This is an increase of $19,099,298 over 1925, when the same items totaled $47,200,254.

Associated Companies

Your board is also pleased to report that all other companies affiliated with this, either as subsidiaries or as associates, experienced unusually profitable years.

The Midwest Refining Co., of whose stock our company owns 99.88 per cent, made its best showing in four years with earnings after taxes of $9,310,948, from which our company received in dividends $2,496,324, which sum is included in the net profit shown by our balance sheet, leaving us an equity of 99.88 per cent in the Midwest's undivided earnings for

(Continued on Page 164)

All Gasoline Is Colorless When Pure

The hydrocarbons of which all gasolines are composed are colorless when pure and will not turn cloudy and darken on exposure to sunlight as in the glass bowls of visible pumps, or in storage. It follows then that gasoline should be colorless and not darken on exposure to sunlight or in storage.

Furthermore the hydrocarbons of which all gasolines are composed, when pure, have a rather agreeable etheral odor;—gasoline then should not have an offensive odor.

Vapor Phase Refining by polymerizing and removing the gum forming and carbon forming compounds—without removing any of the valuable antiknock constituents—delivers a product of good odor and one which remains colorless.

Write us for information

THE GRAY PROCESSES CORPORATION
961-975 FRELINGHUYSEN AVENUE
NEWARK, N. J.

STOP, LOOK A

By W. NDERSO

There are some things that should be said to the refining industry which men engaged in it do not feel free to say publicly through fear of being misunderstood.

The Oil and Gas Journal believes the function of a trade publication in such a situation is to tell the truth to the industry it serves. Often this is the only way a fair hearing can be had, personal opinions being subject to suspicion of ulterior motive or propaganda.

The discussion at the Kansas City meeting of the Western Petroleum Refiners Association indicates that the time has come for plain speaking. Whether a sales manager or an executive should set the prices at which the products of a refinery should be sold is superficial. The fundamental point is that an executive should not turn out more products than can be sold at a profit.

When he does so he contributes to the supply of "distress" products that forces prices below the profit line.

That is how prices are set in a market like the present.

There never was a falling market that was not caused by supply exceeding the demand.

And there is just one way of avoiding falling markets and that is by keeping supply from exceeding demand.

This is so simple, so elementary, that to restate it is almost ridiculous but for the present position of the refining industry which would appear to indicate that many of those engaged in the manufacturing division of the oil business must never have heard of it.

How else, in the light of the facts, could they have got themselves into this predicament?

Their market is known almost to a certainty from year to year. They know just about how much gasoline, their principal product, will be consumed.

They know how much stocks there are on hand and they know there is sufficient manufacturing capacity to remove any possible chance of a shortage of motor fuel during the coming year.

Greatest Danger

They know, too, from experience, that their great danger is, not of having too little, but of making too much gasoline.

The only good year they have had was when they took that lesson to heart and tried to keep their output in line with demand.

They have spent millions upon millions of dollars on new equipment designed to effect greater recovery of gasoline and have actually seen that increased efficiency expand their output year after year but apparently without considering the effect of that gain in yield upon their total supply in relation to demand.

You would really think their only aim was to get more gasoline out of the crude even if they had to give it away and that they were in the business simply to demonstrate the efficiency of their processes regardless of profits.

What other explanation can be offered for this throwing away of the gain they ought to reap from this investment, for that is what it amounts to? Increased efficiency in operations should mean greater return, not "distress" products. Otherwise the refiners only prove themselves better manufacturers than business men.

The situation is not new. The Oil and Gas Journal has repeatedly called attention to the factors that bring it about, showing how the yield of gasoline was being increased from year to year by cracking, by natural gasoline and by improved manufacturing efficiency, and pointing out that these factors were saving millions of barrels of crude.

It has been emphasized also that we were far from having exhausted the possibilities in this direction and that we may look for still greater recovery.

Shown by Figures

The proof of this is shown in the most recent figures of the Bureau of Mines which vary somewhat from those issued a few weeks ago.

They show that in 1926, for the first time in several years, there was a decrease in stocks of crude oil amounting to nearly 28,000,000 barrels.

But the crude in storage at the end of 1925, 424,086,000 barrels, had a potential gasoline value, at that year's yield of 35 per cent, of 148,000,000 barrels of motor fuel. The smaller volume of crude in storage at the close of 1926, 396,208,000 barrels, however, had a potential gasoline value, at the 38.3 per cent yield of that year, of 151,000,000 barrels of motor fuel.

Thus we started this year with no reduction in the potential gasoline value of the crude in storage. On the contrary we had the equivalent of 3,300,000 barrels of gasoline on hand more than a year ago, despite the reduction in crude stocks.

That is one point for the refining industry to remember in determining its rate of operations in 1927.

Last year the production of cracked gasoline increased over 25,000,000 barrels or 36 per cent.

The total production of gasoline at refineries increased 40,000,000 barrels of which 25,000,000 or 63 per cent was cracked gasoline.

That is another point for the refining industry to take into account in setting its operations for this year.

Last year the natural gasoline production increased nearly 7,000,000 barrels.

Thus cracking and natural gasoline contributed 32,000,000 additional barrels of motor fuel to the supply without any additional crude being used.

This is another point of vital importance to refiners in shaping their operating program.

In other words, 80 per cent of the increased production of gasoline last year came from cracking and natural gasoline and only 20 per cent from additional crude.

K AND LISTEN!

By W. NDERSON

Of the increase in domestic consumption of gasoline last year 84 per cent was supplied by cracking and natural gasoline.

The rapidly growing importance of cracking is shown by the record that in 1925, the first year for which figures were available, it furnished 26 per cent of the gasoline supply; last year 8 per cent more and with every assurance that the percentage will be still greater this year.

Surely a factor of the utmost significance in arranging a schedule of refinery operations for the present year.

Compare The Oil and Gas Journal refinery survey on cracking capacity which shows that whereas in May, 1926, the total cracking capacity was 980,960 barrels in March this year it had increased to 1,240,890 barrels, a gain of 25 per cent. The Government's figures show a 36 per cent actual gain in cracking output in two years.

Thus cracking units are increasing in number, capacity and efficiency, a fact to be considered carefully in any comparison of the increase in consumption with the increase in production.

Nor are we anywhere near the saturation point in increased recovery. In Wyoming, for example, cracking furnished 45 per cent of the gasoline output against 34 per cent for the country as a whole. In some plants it runs 50 per cent.

What would be the effect if the entire country got on the Wyoming basis of 45 per cent cracking?

The recovery of gasoline from crude last year was, as stated, 38.3 per cent for the whole country. But in some areas it ran 50 or 55 per cent and individual plants have attained a recovery of 60 or 65 per cent and even as high as 70 per cent.

Who can overestimate the possibilities of cracking and recovery in the future?

California's Possibilities

Consider California which in 1925 produced only 245,000 barrels of natural gasoline and last year 1,250,000 barrels, or five times as much. What they can do in the future is indicated by this increase.

California's production of cracked gasoline last year was but two per cent of its total output contrasted with 34 per cent of cracked gasoline for the whole country. If cracking increases anything like proportionately what effect will that have on the total supply of gasoline?

These are facts and figures which the refiner who hopes to stay in the business must ponder carefully.

They serve to explain what has been happening to the gasoline market when they are disregarded or insufficiently heeded. And they are important sign posts for the future.

They mean that the refiner must curtail the output of the more expensively produced gasolines, must prepare to meet competition not in increased volume but in greater efficiency of production.

Cracking is not only conserving the nation's supply of oil but is giving the consumer a better product.

Increased efficiency in refining ought to yield more valuable products and in consequence better prices to producers of crude. The greater the recovery of gasoline the less there will be of the other products proportionately with the possibility of better prices for them and better prices for the crude.

In Indiana and Illinois last year they got 58 per cent gasoline from the crude against 38.3 per cent for the country as a whole. If it were possible for the entire country to equal the recovery in those two states we could get all the gasoline we need from 265,000,000 barrels less crude a year or 700,000 barrels a day less than last year.

The natural gasoline output last year was 22 per cent greater than in 1925 while cracking production was 36 per cent greater, both at a faster rate than the increase in consumption.

Forty-Four-Gallon Barrels

In 1918 the Government's figures showed that 7 per cent of the gasoline supply came from natural gasoline used at refineries. In 1924 it was 10 per cent and last year 11 per cent.

The proportion of natural gasoline to the production of crude was a half gallon to the barrel a few years ago. At present it is almost two gallons to the barrel.

That is to say we had 42 gallons of crude to every barrel and two gallons of natural gasoline in addition, a 44-gallon barrel.

It is estimated that by late spring or early summer Seminole, the Texas Panhandle and some of the new fields in West Texas may increase the amount of natural gasoline produced 500,000 gallons a day, an increase in these two districts alone of as much as the total consumption of gasoline by the state of Georgia or the entire Rocky Mountain area excepting Colorado.

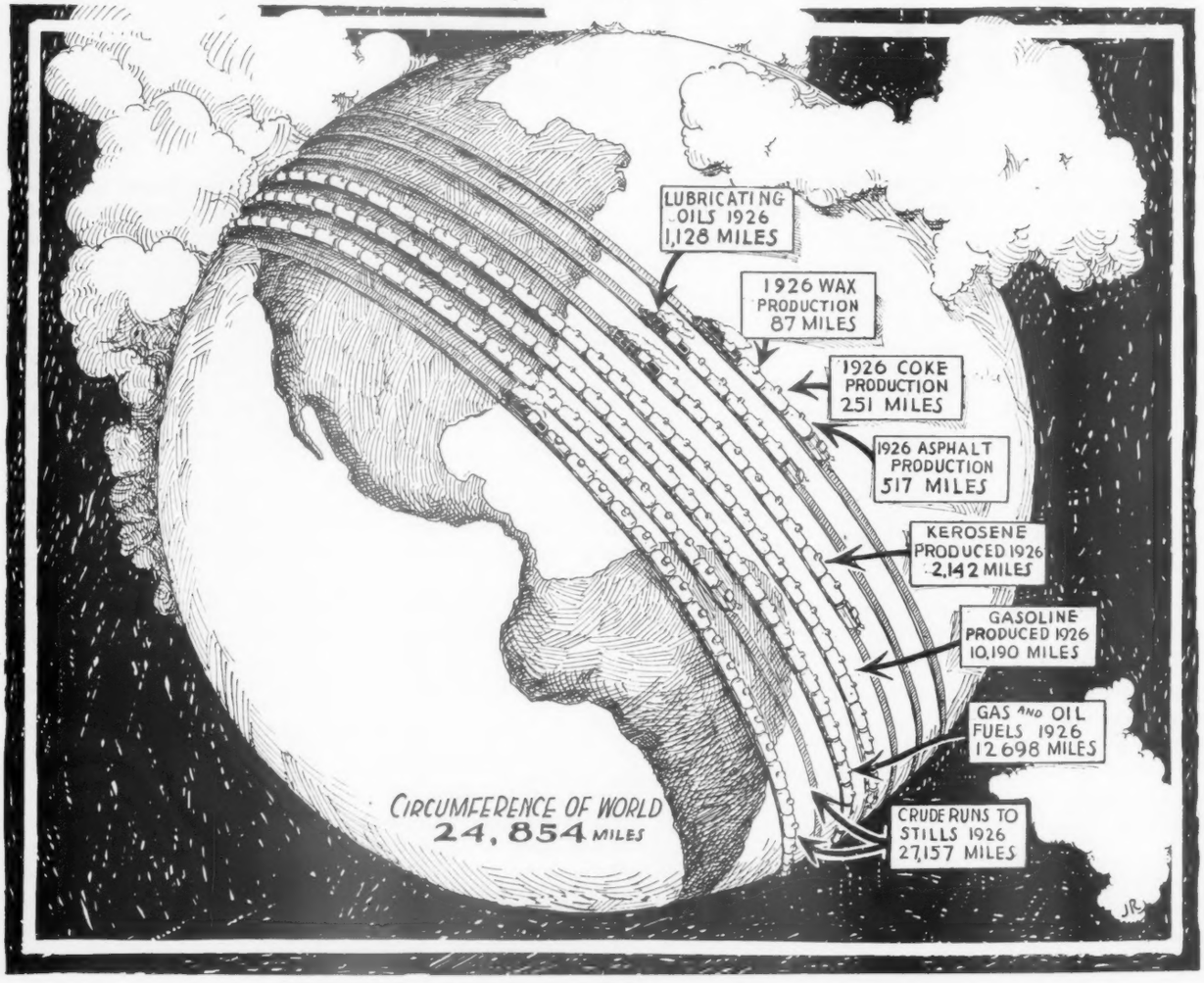
The refiner who sets his operating schedule without taking every single one of these factors into account is running the risk of making "distress" gasoline that will break his market.

Two facts stand out. The increase in consumption this year will be about 12.6 per cent. The recovery of gasoline will be 41 per cent against 38.3 per cent last year. It will be possible to supply 85 per cent of the increase in gasoline consumption without running any more crude than last year.

The successful refiner must base his operations on gasoline, his principal product. Fuel oil is only a competitor with cheap coal. The increased use of distillates for home burners is limited by price. Materially higher prices for products other than gasoline cannot be expected, certainly not sufficient to offset surplus gasoline got rid of at "distress" prices.

The next two or three weeks will largely determine the fate of the gasoline market this year. Too much gasoline has been produced but the situation is not beyond remedy if refiners will gauge their operations in line with the facts in the situation.

Refinery Operations in United States


LUBRICATING OILS 1926 1,128 MILES
1926 WAX PRODUCTION 87 MILES
1926 COKE PRODUCTION 251 MILES
1926 ASPHALT PRODUCTION 517 MILES
KEROSENE PRODUCED 1926 2,142 MILES
GASOLINE PRODUCED 1926 10,190 MILES
GAS AND OIL FUELS 1926 12,698 MILES
CRUDE RUNS TO STILLS 1926 27,157 MILES
CIRCUMFERENCE OF WORLD 24,854 MILES

1926 Operations Measured in Terms of Tank Cars of 8,000-Gallon Capacity.

Five Years of Growth in Petroleum Refining

CRUDE OIL RUNS TO STILLS

(Thousands of Barrels)

	Total Crude Runs to Stills	Increase Over Previous Year	Domestic Crude Run to Stills	Increase Over Previous Year	Foreign Crude Runs to Stills	Increase Over Previous Year	Natural Gasoline at Refineries	Increase Over Previous Year
1926	782,561	42,641	737,598	39,016	44,963	3,625	24,399	4,763
1925	739,920	96,101	698,582	100,628	41,338	*4,427	19,636	6,965
1924	643,719	62,481	597,954	59,722	45,765	2,779	12,671	7,184
1923	581,238	80,532	538,232	112,409	42,986	*31,897	5,487	1,826
1922	500,706	.....	425,823	.....	74,883	.....	3,661	.....

*Decrease.

PRODUCTION AND CONSUMPTION OF REFINED PRODUCTS

GASOLINE (thousands of barrels)

	Domestic Production	Increase Over Previous Year	Imports	Increase Over Previous Year	Domestic Consumption	Increase Over Previous Year	Exports	Increase Over Previous Year	Total Supply Domestic Production Plus Imports	Total Demand Domestic Consumption Plus Exports	Increase Supply Over Demand	Stocks End of Year
1926	299,734	40,133	6,052	2,239	262,165	38,300	43,473	12,835	305,786	305,638	148	39,023
1925	259,601	46,275	3,813	360	223,865	38,862	31,497	3,251	263,414	255,362	8,052	38,875
1924	213,326	33,423	3,453	*1,102	185,063	28,257	28,246	8,110	216,779	213,970	2,809	30,823
1923	179,903	32,231	4,555	3,076	156,746	28,840	20,136	6,349	184,458	177,487	6,971	28,014
1922	147,672	.....	1,479	.....	127,906	.....	13,787	.....	149,151	142,062	7,089	21,043

*Decrease.

KEROSENE (thousands of barrels)

1926	61,768	2,079	75	56	38,329	1,640	22,060	848	61,843	60,389	1,454	8,575
1925	59,689	*337	19	9	39,969	3,257	21,212	*606	59,708	61,181	1,473	7,121
1924	60,026	4,099	10	3	36,712	1,664	21,818	1,629	60,036	58,530	1,506	8,594
1923	55,927	1,014	7	4	35,048	794	20,189	*1,126	56,004	55,237	767	7,231
1922	54,913	.....	3	.....	34,854	.....	21,315	.....	54,916	56,169	1,253	6,692

*Decrease.

(Continued on Page 160)

What Oil Men Need

can be had from Butler. Butler service is complete and world-wide

Oil men need buildings. Whether it is a pump house, an engine house, a warehouse, gasoline plant, etc., Butler furnishes them complete, ready to erect. Tanks, bolted or welded, can be had from Butler. So can a truck tank, underground tank, etc. So can buckets, cans, funnels, measuring pumps, etc. Butler service is all-inclusive.

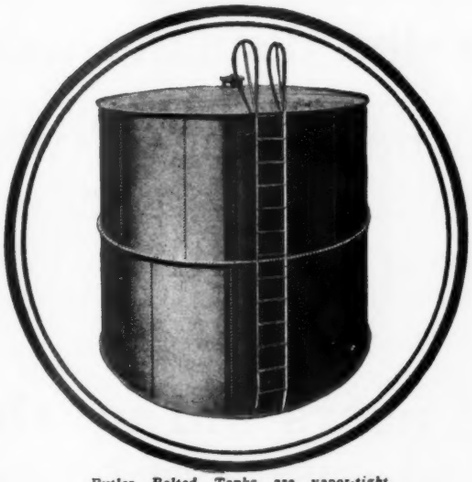
Butler shipments are world-wide. Butler equipment has been exported to Cuba, Mexico, Russia, Canada, England, Australia, the Philippines, Hawaii, Persia, Argentine and other Latin-American countries.

Butler Oil Equipment Catalog contains 96 pages, illustrated in 4 colors. It is full of useful, handy information. Copy sent on request.

Butler Building Catalog shows actual installations of drive-in stations, warehouses, gasoline plants, etc., that oil men are using. It has many features and pictures. Send for a copy.

Literature picturing and describing any of the products made by Butler will be sent promptly upon request.

The Butler Visible Pump has a distinctive, improved pumping unit, a fine appearance and is substantial.



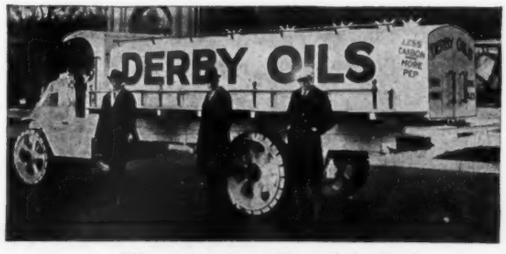
Butler Bolted Tanks are vapor-tight. Large sheets reduce number of seams and chances for leaks.

TRADE STEEL BUTLER PRODUCTS MARK

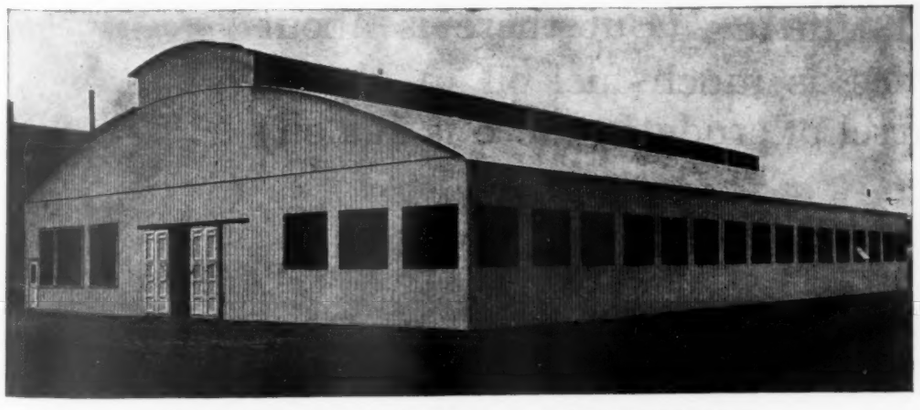
Butler Manufacturing Co.

Kansas City, Mo. **Minneapolis, Minn.**

Foreign Dept.: Kansas City, Mo.



Sills are interchangeable on Butler Truck Tanks, having 12-inch adjustment. Welding is on the outside, making all seams easily accessible.



This is a Butler READY-MADE Steel Round Roof Building. Other types also are furnished for all uses of oil men. Local labor can erect them. Shipped complete.

This is a Butler READY-MADE Steel Drive-in Station. Single or double canopy. Local labor can erect Butler Stations. Shipped complete.

The oil burner—both for industrial and domestic use—is here to stay Convenience and cleanliness and powerful sales campaigns are resulting in their installation by the thousands and will continue to do so in increasing measure even with advancing prices for the distillate used

A three-cornered tug-of-war has begun, with many a refiner pulling against the other two corners

Industrial users bid up the price of fuel oil—users of household burners bid up the price of light distillate (But there is about three times as much fuel oil in almost every barrel of crude as there is gas oil)

—and bidding against the individual house-owner, is the refiner with a cracking process limited to the use of gas oil and light distillates

Handicapped in this three-cornered fight, how can a refiner have the ghost of a chance against the refiner equipped with Dubbs Cracking Units who is able to crack fuel oil, topped crude or crude direct—and gas oil when he wants to, or must

Universal Oil Products Company
Owner of the Dubbs Process
310 South Michigan Ave
Chicago, Illinois

Gasoline From Gases at Refineries

Many Angles to Consider in Determining Most Efficient Type of Installations. Various Processes Described

By George A. Burrell
Consulting Chemical Engineer, Pittsburgh, Pa.

GAS RECOVERY SYSTEMS AT REFINERIES

At many refinery recovery plants, the pressures are too low. If a compression plant alone is used, the gas is seldom, if ever, tested to check up on the efficiency of the plant.

If the naphtha absorption system is used, the gas is not put under high enough pressure, or the lean gas is mixed indiscriminately with the rich gas, thereby cutting down efficiency; and frequently too much of a vacuum is pulled on the refinery system, thereby crediting the recovery plant with gasoline that should have gone to the condenser. Absorber fillings are inefficient; and if an oil plant is used, too much steam is needed.

The foregoing are some of the conclusions of the author explained in this article. A description of the three main types is given, together with operating data obtained from representative refinery installations.

Almost every refinery at the present time has a unit for recovering gasoline from still and tank gases and vapors. This recovered gasoline may in the summer time amount to as much as 3 per cent based on the crude charging stock. At most refineries water for condensing purposes is not as cold as in the winter time, hence more gasoline escapes condensation in the condenser coils; further, evaporation losses are greater all over the plant.

The gasoline recovered is of high gravity, or should be (88-92 degrees A. P. I.), and is of the same general characteristics as natural gasoline. In fact, the yield of recoverable gasoline at some refineries is such that in connection with some gasoline of low I. B. P., from cracking stills, the need for natural gasoline to "pep" up motor fuel at those refineries is reduced to a negligible quantity.

On the other hand, this is more than compensated for at some refineries by the fact that with better fractionating towers the yield of straight-run gasoline has increased by stripping the kerosene fraction more completely, thus sending the I. B. P. up and the gravity down. One result of this better fractionation has been an increased output of high gravity, low endpoint gasoline. If one keeps the gravity up of gasoline from good towers, the endpoint has to stay down.

Ludwig Schmidt[1] has probably recorded the most reliable figures covering average evaporation losses of gasoline in a refinery.

Average losses are:

Stage of Handling—	Per cent Loss
Run down tanks	1.8
Treating	0.5
Filling tank cars	0.5
Storage	2.5
Miscellaneous handling	1.0
Total	6.3

This miscellaneous handling per cent is based on the assumption that the gasoline is handled at least three times after leaving the run down tanks. The storage loss is based upon the assumption that, on the average, gasoline is held three months before shipping. Ten thousand and twenty-five thousand barrel tanks showed average losses of 6.44 and 6.28 bbls. per day.

The foregoing losses are high for most refineries of today. With efficient columns, rerunning has been markedly reduced. But the losses are of a high order, even so. Fair figures for the gasoline recovered from refineries running a high gasoline content crude oil are probably 0.5 to 3.5 per cent. Many refineries do not recover this much; but if not, their methods are usually faulty. Further, many refiners recover gasoline of the order of 78-82 degrees A. P. I. But their recoveries are too low. They should be recovering 30 to 50 per cent more.

Amount Recovered

The amount recovered will depend upon the type of crude oil handled; amount of rerunning and handling; efficiency of recovery plant; season of the year; nature of water supply; type of tankage.

Sources from which gasoline may be recovered are: Crude stills; rerun stills; cracking stills; storage tanks; loading racks; batch agitators.

The type of recovery plant may be: Compression; oil absorption; naphtha absorption.

Compression Plants

Compression plants were first installed in refineries to recover the waste gasoline. This naturally followed because compression plants were first used in the natural gasoline industry, and gasoline recovery in refineries is, of course, no different in principle than gasoline recovery from natural gas.

Compression plants are simple, consisting essentially of a compressor, a prime mover to run it (usually a steam engine), a condenser and a receiving tank. A compression plant only works on what is known as rich gases of the order of 1 gallon upwards of gasoline per 1,000 feet of gas. Otherwise pressures are prohibitively high. In the irregular flow of gas in some refineries, when the gas comes through lean, there is little or no recovery by the compression plant of the gasoline in the gas. This is the objection to compression plant practice at some refineries. The usual pressure applied is of the order of 40-100 pounds.

With the more general use of rectifying towers, greater pressures can be applied, and wild gasoline so made can be fractionated into stable and wild fractions, the latter being returned to the plant inlet. In gasoline plant practice, a cut is made between the methane, ethane and propane on the one hand and butane upwards on the other. The same principles apply as in other refinery practice; one applies such a temperature and pressure as to reflux back at the top of the column part of the overhead cut. The tower must be equipped with good filling material to bring about intimate contact between rising vapor and condensing liquid, the proper temperature must be used at the base to drive the volatile cut overhead, velocities must be suitable, and the column must be lagged.

In the case of natural gasoline, propane is the principle overhead product. Hence one has to carry at the top of the column such a temperature as will correspond to the boiling point of propane at its particular pressure. This partial pressure will depend upon the pressure superimposed on the column and on the per cent of propane present. It is tedious to determine this propane content, hence one gets the tower, after a few trials, to produce the grade of gasoline desired. These columns have been called stabilizers, and their real working somewhat clouded. But they are founded on principles established 40 years ago and used by the thousands in many different arts.

Oil Absorption Plants

The oil absorption process works equally well on rich or lean gas, but a unit is more complicated than a compression plant unit, consisting as it does of absorbers, still, heat exchanger, oil cooling coils, condenser, receiving tank and pumps. For economical operation, a compressor must be used to put the gas under pressure. Gas flows may vary; hence if the plant is not built to handle the optimum flow, the efficiency will go down.

In building an oil plant at a refinery, one will do well to follow the advances in the natural gasoline art. These consist principally of better absorption towers, better stills, and general adoption of rectifying towers.

Of course, heat exchangers, oil-cooling coils and moving equipment have all been improved also.

Absorbers are now made of large capacity, so that one does the work formerly done by a battery. The natural gasoline operator has taken a leaf out of the refiners' book and brought about better contact by using some form of a bubble tower. Here contact between descending liquid and rising gas is much better than in the old type of filled absorbers. Hence equipment and operating costs go down, the quantity of oil used is less, and stripping is better. The same is true of steam stills. The old-time still, where the steam was blown through a body of oil in a tank, was inefficient. It was obtained from the refiner. Much of the steam (in bubbles) was blown right through the oil, and the interior of the bubble missed contact. New column stills of the bubble type are used, contact and stripping is better, and fuel costs go down.

The author uses a bubble-type tower devised by his associate, R. P. Mase. There are five contacts on each plate in series, instead of only one, as in the ordinary form of bubble tower.

Temperatures are not carried high enough in most stills. The last trace of

(Continued on Page 151)

[1] U. S. Bureau of Mines.

Greatest Need of Refiners Is Better Tank Car Sales Methods

By C. L. Henderson
Vice President, The Vickers Petroleum Company

The Manufacturers Committee of the Western Petroleum Refiners Association has been active in holding meetings of the technical men connected with member companies, and at these meetings ideas are exchanged and discussions are had relative to economies and improvements that can be made in manufacturing operations. This move is progressing very satisfactorily and is proving of great benefit to the refiners in the cutting down of their costs and the raising of their yields. The Manufacturers Committee expects to continue this work, with hope of being able to still further improve the refiners' manufacturing conditions. However, it seems as if all the benefit which it secures is immediately given up by the Sales Departments in reducing the tank car price of gasoline. The most important problem confronting the oil refining industry today is the securing of a tank car price for gasoline that is properly proportioned between the cost of crude oil and the price at which gasoline is sold to the ultimate consumer. There has hardly ever been a time but that there was ample margin between the cost of crude and the consumers' gasoline price to provide for reasonable profits to both the refiner and jobber (meaning by jobber the man who buys gasoline in tank car lots for resale in less than tank car lots).

The refiners' sales organizations are lagging behind the manufacturing department in improving conditions. The sales organizations should realize that the demand for gasoline cannot be changed by any efforts which they may make. The amount used is independent of anything the industry can do. The supply however, can be changed and conservation should be applied here at this particular point in the petroleum industry just as much as it should be in the production and handling of crude oil. If only a small percentage of the money and effort that is now being spent to improve manufacturing conditions were expended to improve marketing conditions, the returns would be startling.

NO CARBON KNOCKS with CROWN OILS

HARD sticky carbon in the automotive engine, not only kills good compression and wastes power. But also causes a destructive knocking in the engine which the motorist wants to avoid.

It is to your advantage to help him get rid of this nuisance. And you can, if you recommend CROWN Oils. For CROWN Oils are highly refined lubricants that are not blended with cylinder stocks or bright stocks, and are therefore free from carbon, paraffine wax, tarry matter and other impurities. They distill off clean from piston heads and cylinder walls. What little carbon is formed is dry, soft, and powdery, and carried out with the exhaust.

No motor will knock with CROWN Oils!

General Sales Office: Post-Dispatch Building, Houston, Texas
Branch Sales Office
17 Battery Place, New York, N. Y.
Refinery and Terminal
Houston, Texas
Cable Address: Crowncen, Houston

CROWN CENTRAL
PETROLEUM CORPORATION
New York-Houston

Producing Gasolines From Shale Oil

High Yields Obtainable by Present Refining Methods When Raw Material Is Available in Competition With Petroleum

By Dr. Roy Cross

Fifteen years ago there were many proponents of the idea that shale oil would soon serve as the main source of supply of gasoline and fuel oils. While it is now apparent that the fear concerning the rapid depletion of our petroleum resources is unfounded, other elements are entering into the economic question as to whether shale oil may be produced or will be used as a source of motor fuel. The most important of these elements are the increasing cost of producing petroleum and the quality of the motor fuel now in demand.

Oil shale as such does not contain any appreciable amount of oil. Certain types of so-called oil shales such as those found near Santa Maria, Calif., are more of the nature of asphalt-like substances or asphaltenes absorbed by clay. This is shown by the fact that the solubility of the oil shale in carbon disulphide or carbon tetrachloride in some instances is as much as 50 per cent of the oil that may recovered by pyrolytic distillation. In most cases, however, the organic hydrocarbon material found in oil shale has no solubility whatever in any of the ordinary solvents for hydrocarbons or asphaltenes. The hydrocarbons of oil shale may, therefore, have a chemical composition between ordinary petroleum and coal. In fact, cannel coal yields on distillation oil or tar very similar to that obtained by the distillation of oil shale.

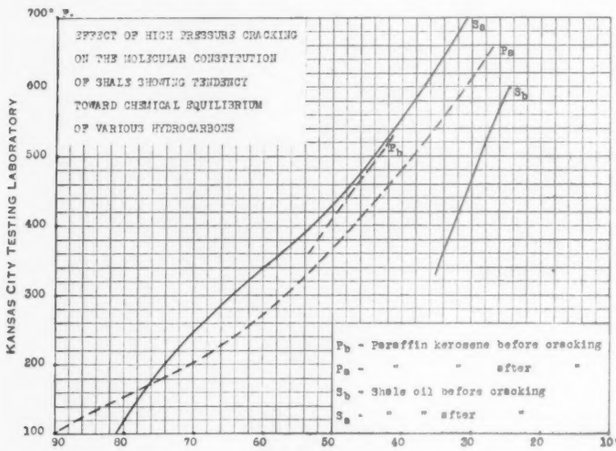


Figure 1

Bituminous coal by low temperature distillation gives a product in some ways similar, but distinctly characterized by the presence of hydroxyl groups such as are found in cresols. Such oil shales however, do yield a small amount of cresols. Ordinary bituminous coal by low temperature distillation may yield as much as 50 per cent of the recovered tar in the form of cresols, and even after thermal decomposition will yield light phenolic products having the boiling range of gasoline.

Physical Properties Variable

The physical properties of shale oil are extremely variable; for example, the specific gravity varies from 1.0 down to 0.85. Typical samples analyzed in the Kansas City Testing Laboratory have given the following values:

Source	Gravity
Utah	0.931=20.5°
California	0.986=12.0°
Spain	0.883=28.7°
Manchuria	0.895=26.9°
Esthonia	0.984=12.3°
Canada	0.893=27.0°
Colorado	0.920=22.1°
Scotland	0.883=28.8°

The above gravities represent the oils as actually condensed from the retort, and they rarely contain as much as 20 per cent of naphtha having an endpoint of 437 degrees Fahrenheit. The crude oils in general correspond to a very low grade of crude petroleum.

Usually, the shale oil contains a considerable amount of wax, so that the cold test varies between 50 degrees Fahrenheit and 100 degrees Fahrenheit; for example, a typical Colorado shale oil has a cold test of from 70-75 degrees Fahrenheit. Most of the Scottish, Nevada and Utah shale oils have a cold test of about 90 degrees Fahrenheit. The Spanish and Brazil shales yield oils having a cold test as low as 60 degrees Fahrenheit.

Sulphur Content

The properties of shale oils which in the past have made them least desirable for refining have been the very high sulphur content and the high percentage of unsaturated hydrocarbons. The sulphur content of crude shale oil is often as high as 7 per cent, although much shale oil has a sulphur content as low as 0.5 per cent. At the same time, these oils carry olefins or unsaturated compounds to the extent of 30 per cent to 70 per cent. These properties, therefore, make it necessary to refine shale oil in a somewhat different manner from the ordinary methods of refining petroleum. It is well known that the unsaturated compounds are soluble in concentrated sulphuric acid and therefore this very useful and efficient treating agent must be almost entirely eliminated as a refining agent.

Another property peculiar to shale oil, which is not particularly undesirable, is the presence of nitrogenous compounds of the type of ammonia and pyridines. There is ordinarily enough ammonia so that from each ton of average shale 34 pounds of ammonium sulphate may be made. The value of ammonia in refining lies particularly in the fact that it is very useful in preventing the corrosion of the equipment by the action of the sulphur. In fact, it may become feasible to refine shale oil mixed with ordinary petroleum, as it in some instances will considerably reduce the corrosive action of the sulphur in the petroleum.

Refining Shale Oil

Practically, when we consider the refining of shale oil, we have a starting material which is much the same as fuel oil from petroleum or heavy crude oil. The same problems relative to low cold test, viscosity, and lack of light fractions exists. Refining, therefore, becomes a problem of cracking or pyrolysis, and it is in the application of cracking to shale oil that we obtain some peculiar results. An illustration of such results is graphically illustrated in Figure 1. In this figure the curve Sb represents the distillation range and the gravity range of a typical shale oil as obtained by the condensation of the overhead distillate of oil shale. Curve Sa represents the same shale oil after being treated at a temperature of approximately 850 degrees Fahrenheit and a pressure of 1,000 pounds to make a synthetic crude oil. It will be observed that there is a tendency for the shale oil to approach an equilibrium between the various hydrocarbons of various distilling temperatures. At the same time, it will be noted that there is a radical change in the relation between the distilling temperature and the gravity. This change is toward the properties of ordinary saturated hydrocarbons.

This is further indicated by the fact that before the treatment under high temperature and pressure, the solubility in 66 degree sulphuric acid was 60 per cent, whereas after the treatment in 66 degree sulphuric acid, it was only about 20 per cent. It has been observed furthermore, that when hydrogen under pressure is introduced the same general equilibrium between the hydrocarbons results, the material difference being in the larger percentage of saturated hydrocarbons, the lower yield of gas, and the larger ultimate yield of gasoline.

In any type of shale oil, as well as petroleum, there is the establishment of an approximate equilibrium between the various hydrocarbons or various gravities and boiling temperatures. There is a formation during pyrolysis of higher boiling as well as higher gravity products, as is shown in Figure 1. In general the same applies to ordinary petroleum oil. In this figure the curve Pb represents a paraffin base kerosene before subjecting to a temperature of approximately 850 degrees Fahrenheit and a pressure of approximately 1,000 pounds, and the curve Pa shows the synthetic crude oil made under those conditions. Here again it will be seen that there is a condensation or polymerization of hydrocarbons, as well as the formation of lighter products. Also there is the same tendency toward an equilibrium among the different hydrocarbons. This equilibrium may be shown by the fact that when the lighter fractions of these synthetic crude oils are subjected to the same treatment, the same general equilibrium is again produced in which there are considerable portions of much heavier hydrocarbons. Likewise, the heavier hydrocarbons when subjected to this treatment, again produce the whole series of light and heavy hydrocarbons, thus tending to reach the same general equilibrium.

Gasoline Yields

From a practical standpoint, the most important thing, of course, is the total yield of gasoline or motor fuel. This is illustrated in Figure 2, in which the ultimate yield of gasoline is shown in relation to the gravity of various shale oils. There is, of course, considerable variation from the average, due principally to the large amount of sulphur present. A sample containing 7 per cent sulphur obviously will not yield as much gasoline as a sample containing 0.5 per cent of sulphur or a large percentage of wax. The curve shown in Figure 2 represents the yields while at the same time producing a commercial or valuable residue. The yields of course are somewhat increased with coking, or greatly increased by hydrogenation, but this graph merely shows what may be expected with existing cracking plants of the suitable type. At present, there is ample cracking plants which are waiting and ready for shale oil when it is available for cracking, and there is no serious problem in this stage of the refining of shale oil.

Making Finished Product

However, the next stage, that of converting the crude gasoline made by cracking into a finished motor fuel, is a greater problem. Shale oil gasoline as it would be produced by the normal operation of a petroleum refinery is a very obnoxious fluid having a rank odor of unsaturated compounds, sulphur compounds nitrogenous compounds, and the like. It may distill over as a pale yellow color, but rapidly turns to a murky red fluid. The chief problems connected with the refining of this material are those for the removal of the nitrogenous and sulphur compounds, and the production of a water white merchantable product without excessive loss of the valuable hydrocarbons.

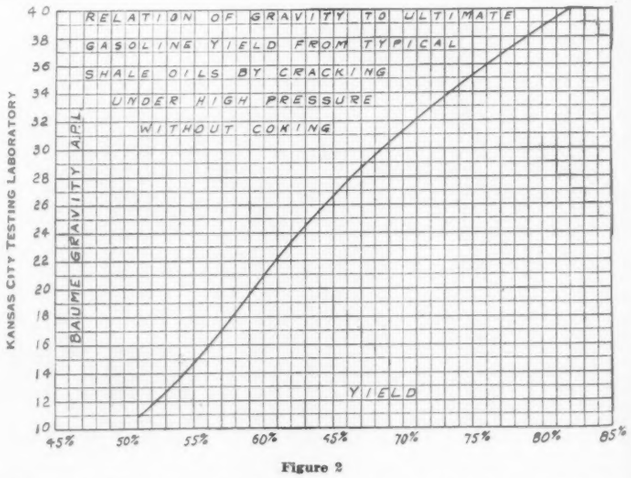


Figure 2

It is well known that concentrated sulphuric acid will dissolve practically all of the undesirable constituents of shale oil gasoline, but at the same time, it will occasion loss of as much as 40 or 50 per cent of the desirable hydrocarbons. It is therefore essential that other methods of refining be used. Dilute sulphuric acid, when applied very rapidly, in some instances will make a merchantable prod-

(Continued on Page 148)

PYROMETERS

CONTROLLING
RECORDING
INDICATING

Over 75,000 Brown Pyrometers are now in service. More Brown Pyrometers are in use today than any other single make. On this basis it can be justly claimed that Brown Pyrometers are the standard high temperature measuring instruments of American industry.

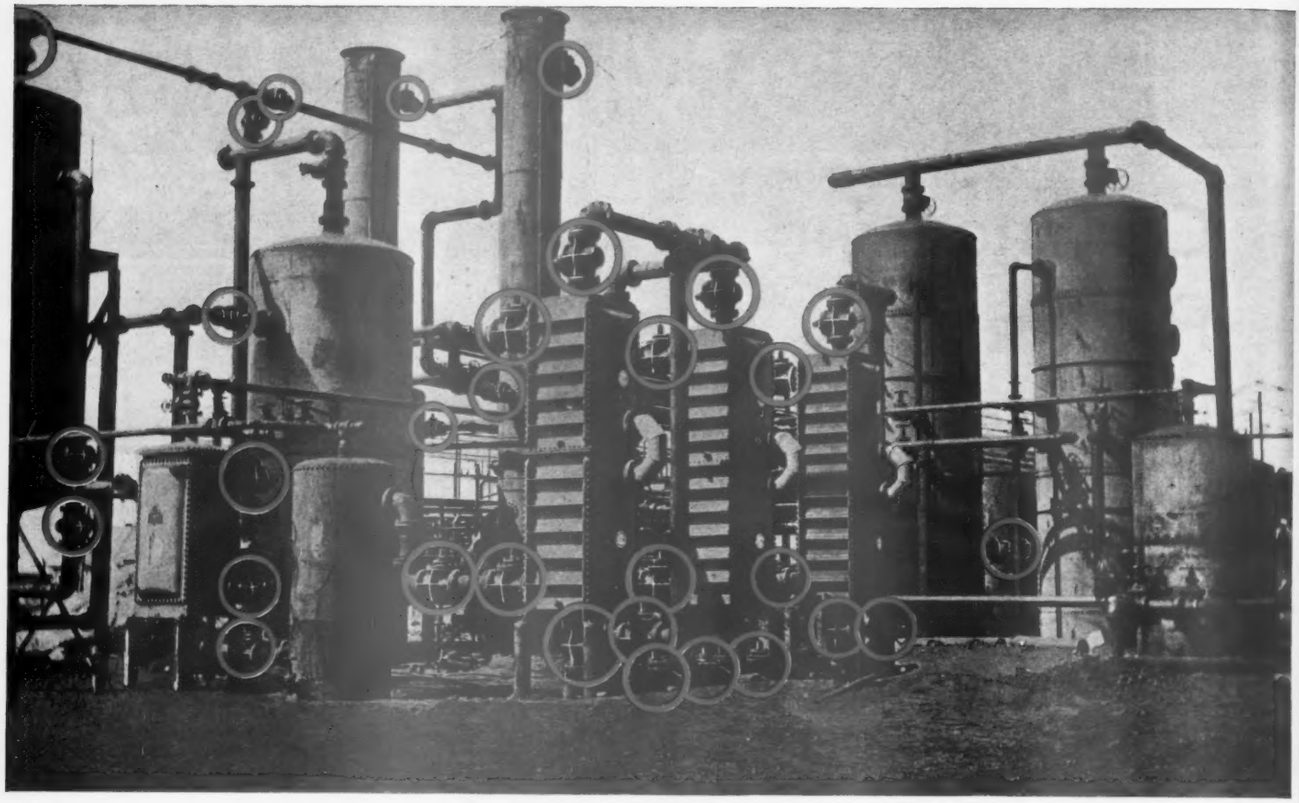
Address—The Brown Instrument Company, 4412 Wayne Avenue, Philadelphia, Pa., or any of our district offices in New York, Boston, Buffalo, Pittsburgh, Cleveland, Detroit, Chicago, Cincinnati, Birmingham, St. Louis, Tulsa, Houston, El Paso, Los Angeles, San Francisco, Denver, Salt Lake City or Montreal.

"To Measure is to Economize"—Pascal

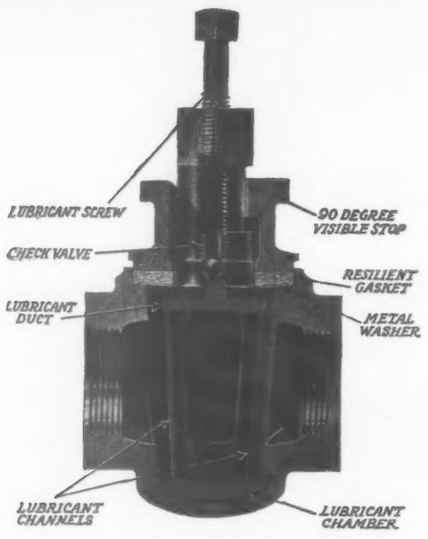
BROWN

INSTRUMENTS FOR Oil REFINERS

Catalog #15 The new Brown Pyrometer Catalog is now ready. Get it!



No valve leaks in this plant



The modern gasoline plant dares not tolerate leaks or inefficient operation of valves. Pictured above is an installation in a natural gasoline plant, indicating locations of Merco-Nordstrom Plug Valves. These valves operate under high and low pressures, and in varying temperatures. They are giving eminently satisfactory service under the most difficult conditions.

You can adapt Merco Nordstrom Plug Valves to your service everywhere in your plant where valves are required. We manufacture these valves in all required sizes with two, three and four-way openings and in different types of metal to meet your particular conditions. Request our new catalog.

MERCO NORDSTROM VALVE COMPANY

SUBSIDIARY OF THE MERRILL COMPANY

Engineers— Manufacturers

San Francisco 121 Second Street · New York 110 W. 40th Street · Chicago Peoples Gas Building · Houston 613 Washington Avenue · Cleveland 323 Engineers Building · *Agencies in Principal Cities*

Western Factory—Oakland, Calif. Eastern Factory—Belleville, N. J.

Merco Nordstrom PLUG VALVES

Developments in Petroleum Refining

Practically All Phases of Plant Construction Are Constantly Changing in Order to Secure Maximum Operating Efficiency

By C. K. Francis
Technical Editor

When making a review of all the things that have been accomplished during the past year by the petroleum refiners it is not difficult to mention numerous achievements; however, it is no simple task to enumerate the most important. The art of refining is rapidly being reduced to a science with consequent increases in capacity, improvement in quality of all products and the elimination of waste. Rapid strides have been made in advancing the practice and knowedge of converting the crude oil into useful products and only a partial list of what now appear to be the most important can be given.

Advances in the form of the still are away from the shell still in favor of the tube or pipe still. Efforts are being directed not toward running more oil in the refineries, but more efficiently and with greater yields. The application of the hot oil pump to the air circulation is aiding in this.

The improved quality of the gasoline marketed has been noted by all. The refiner no longer considers gravity an outstanding property of good gasoline and the color question has been reduced to a condition where one may suit his taste; even to the extent of having the color of the fuel match that of the car. The perfection, and quite general application, of the absorption and fractionation tower of the bubble type has enabled the refiner to produce a gasoline free from the heavier oils and enriched by increased percentages of the lighter products.

Other conditions which have aided in improving the quality as reflected in the lowered initial boiling point and the end point, include improved storage conditions for the crude oil; more extensive application of systems for the recovery of gasoline from refinery vapors; better cracked gasoline; and the better natural gasoline.

Gas tight tanks for the storage of crude arranged to be connected with the gas collecting system when active, and appliances for control of breathing of all tanks containing light products under changing temperature conditions, have had a part in conserving appreciable quantities of the more volatile gasolines.

Gasoline recovery plants for the treatment of refinery vapors are of increasing importance. They are linked with the steadily advancing yield of gasoline from the crude. There has been no great increase in the number of barrels of oil processed, but the yields, through greater efficiency, are always getting larger. The yield, based on the quantity of oil charged, of gasoline was 27 per cent in 1920; it was 37.5 per cent in 1926; and will probably be 40 per cent for the present year, while by 1930 there is little doubt that this yield will be close to, if not beyond, 50 per cent. A few years ago some refinery vapors contained 12 gallons of gasoline to the 1,000 feet, but an appreciation of adequate condensing equipment, including the closed systems, has decreased this in many plants to the extent of over 75 per cent.

Closed Condensing Systems

In addition to the influence on the quality of the product the various forms of the closed condensing system have a marked effect on the yield, fuel economy and water costs. Greater recoveries are possible, closer control is established, less fuel is necessary and it is feasible to use much smaller condenser boxes with reduced quantities of water to be handled. The design of heat exchangers is receiving close attention with the result that there is a wider application. The use of appropriate metals in the heat exchangers is now recognized as essential for satisfactory performance.

The fact that some crude oils do not contain much, if any, of the volatile gasolines which are required to be present in a high grade motor fuel, has continued to make necessary the addition of natural gasoline to the product from these heavy crudes. The progress in refining methods has been such that there are reduced demands from the refiner for natural gasoline, however, the lowered initial of much of the extra quality gasoline marketed during the year has been possible on the account of the high quality of natural gasoline obtainable. The product is now made in a more stabilized condition than it was possible to procure a few years ago.

No small contribution to improved quality of the motor fuel was made through advances in the cracking art. The units are increasing in size and efficiency. Not only is there much increased capacity, but there are greater recoveries; this is especially true concerning the lighter fractions which so improve the volatility of the gasoline obtained from the pressure still. The modern pressure still, including auxiliary equipment, now operates to produce a gasoline which needs no further heat treatment and which is free from color. It has been demonstrated that much of the cracked gasolines possess added quality over gasoline obtained direct from the crude, because, by means of the cracking process, there are formed certain antiknock compounds, so much desired for best motor performance. Unfortunately, the usual treating methods reduce the quantity of these substances. There remains the important problem of discovering methods for the removal of objectionable substances without reducing the antiknock value.

Modern Pipe Still

There was a wide recognition of the value of the modern pipe still as a means for obtaining increased capacity, greater recoveries of overhead products and mild cracking of the residue. The reduction of the crude was carried to a greater degree by these stills, and because of the mild cracking, in many instances, the final residue was a superior product from that ordinarily obtained, because it flowed easier and was capable of producing more heat. With the further perfection of this type of still, including the reflux towers, exchangers and other condensing apparatus, distribution of heat, and automotive control, we may expect continuous operation and complete separation, including cracking, in one unit.

During the year the refining industry became interested in the problem of running the abnormal oil produced in the Panhandle of Texas. This crude was found in such large volumes over a very extensive area that notwithstanding the fact that it contained excessive quantities of salt, sulphur and water, its quality aroused a wide interest. It contains enough gasoline and other products to warrant it being included in the high grade crudes of the world but the impurities lower its value. While the methods which have been used and proposed for refining Panhandle crude are interesting and valuable, the great importance lies in the studies which have been initiated for the solution of the many problems involved.

The very fact of this research has materially benefited refining methods, improved the grade of construction, material, and improved sanitary conditions for the workmen. The corrosion difficulties encountered when refining this crude have stimulated research which must result in the prevention of loss through the application of metals which are known to resist many forms of corrosion.

So much damage has been done to

(Continued on Page 139)

Refiners Should Guard Against Overproduction of Motor Fuels

By W. S. Farish
President, Humble Oil & Refining Company

We hear constantly of the problems of the Mid-Continent refiner, and he is generally considered as having different problems from the average refiner. A review of statistics reveals the startling fact that even within the Mid-Continent, as a group, 85 per cent of the companies operating refineries produce more crude than they are refining. A large part of all crude purchased moves away from the Mid-Continent to be refined. As a rule refiners are also producers. The average refiner's problem, therefore, is closely tied to the crude oil problem. His problem is largely that of cutting up raw material into the various products that he can sell, and that he is merely a link in the chain between the well and the filling station.

The principal product, of course, is gasoline; but there is a definite limit on the amount of gasoline that can be sold in the world's markets. We enjoyed an increase in demand from the United States, from all sources, last year of approximately 45,000,000 bbls. of gasoline, and are hopeful of enjoying a similar, or slightly larger increase this year. However, with crude production running 560,000 bbls. daily over what it was this time last year, 400,000 bbls. or more of this being light crude, and considering the fact that casinghead gasoline production will probably increase 3,000,000 to 5,000,000 bbls., and that additional cracking facilities are being built with a capacity of approximately 25,000,000 bbls. of gasoline annually; it is apparent to the most casual observer that the easiest job the refiner will have this year will be to make all the gasoline he can hope to sell. In view of this situation, I believe that the refiner's duty to the industry over 1927, particualrly the first half of the year, is to so adjust his operations as to consume the maximum amount of crude, producing therefrom the minimum amount of gasoline that it is possible to economically produce. If he refuses to take crude in quantity as offered, he will further complicate the problems of the producer and the pipe line. If he takes crude in large quantities and makes the highest yield of gasoline, he will demoralize the markets for his principal product.

Recent statistics show that we are making cracked gasoline at the rate of 110,000,000 bbls. annually, and I venture the opinion that one-fourth to one-half of this quantity is being made from inefficient cracking equipment at a cost as great as natural gasoline from crude. All of our refineries are equipped to top crude in excess of their normal runs, and wherever they are able to shut down cracking equipment, which will reduce the gasoline yield, increasing their production of fuel oil proportionate to the increased amount of crude run, it is my opinion that they will not only serve themselves but will also serve the industry.

Fuel oil is the only one of the numerous products that we make for which we can in any material way influence the demand. The demand for fuel oil is unlimited if the price is low enough, whereas the influence of prices within their present range is negligible on the demand for any other product. Fuel oil is the cheapest product to store, in that it suffers no evaporation and there is no fire risk, and it requires less than one-half the capital required to store crude, and one-third or one-fourth of the cash required to store gasoline.

Furthermore, any refiner east of California should be able to borrow at least $1 per barrel from the most conservative banker against fuel in storage, as it is more stable collateral than wheat. It is the only commodity that we can store with assurance that it can be moved within a reasonable period, if necessary, into the fuel markets, or, preferably, used later as charging stock. Such a program of taking off the gasoline and storing the heavy residue is in line with conservation ideas.

Greater Cracking Facilities Feature

Annual Survey Shows Approximately 25 per cent In Plants Operating. Several New Refineries Built.

By C. O. Willson

An increase in cracking facilities amounting to approximately 25 per cent.

A small increase in the crude capacity of the operating refineries during the year despite the fact that 33 fewer refineries are in operation.

A decrease of approximately 100,000 bbls. daily in the capacity of shutdown refineries due to the fact that 59 plants were dismantled.

More new refinery construction than any yearly period since 1924.

The foregoing are the outstanding developments in the manufacturing end of the oil business as shown by the 1927 Refinery Survey of The Oil and Gas Journal. The survey, which is the most complete ever made, gives the personnel of the companies as well as the detailed data covering plant operations.

The comparisons made are based on the May 1 report of last year and this year's report, which was completed as of March 1, so that the changes shown cover a period of 10 months instead of the usual 12 months.

The rapid expansion of cracking facilities for the manufacture of gasoline and other light end products is easily the outstanding change in refinery capacities as reflected in this year's data on plant operations. The relatively small increase in crude oil capacity of the operating plants simply continues a trend which has been apparent for the past four years, the operators considered as a whole devoting their efforts to increasing the efficiency of their plants rather than enlarging their facilities to handle more raw crude oil.

TABLE 1—Growth in Petroleum Refining

Year—	Total No. of Refineries	Total Crude Capacity Bbls. Dy.	No. of Operating Refineries	Capacity Operating Refineries Bbls. Dy.	*Number Refineries With Crack'g Proc'es	Cracking Capacities Bbls. Dy.
1914	176	.....	...	.....	...	.....
1918	267	1,186,155	...	.....	...	.....
1919	289	1,295,115	...	.....	...	.....
1920	373	1,530,565	...	.....	...	.....
1921	415	1,888,800	...	.....	...	.....
1922	479	2,164,050	325	1,854,590	...	.....
1924	574	3,046,790	362	2,549,490	...	.....
1925	584	3,033,682	385	2,680,052	†..	†.....
1926	515	3,068,340	356	2,770,340	150	980,960
1927	456	3,185,257	323	2,926,327	158	1,240,890

†Not available previous to 1926.

Expansion in Cracking

Relative to the expansion in cracking facilities attention is called to Tables 1 and 2 and the data by states which give the cracking capacity of all operating refineries in the United States including the type of cracking process. Table 1 shows that the cracking capacity of the operating refineries increased from 980,960 bbls. daily on May 1 of last year to 1,240,890 bbls. on March 1 of this year, an increase of 269,930 bbls.

The cracking surveys for the two years which were the first ever made for publication covering the entire United States include a few cracking units under construction. In the case of the March 1 survey, the units under construction will be completed and in operation within a period of a few months.

It will be noted that the increase in cracking occurred despite the fact that the number of refineries with this equipment only increased from 150 to 158 during the period covered in the yearly survey. Actually 12 new companies installed their first cracking equipment. Four refineries with cracking equipment shut down during the year so that only eight plants were added to the total number operating.

Large Company Expansion

These data reflect another situation which has obtained for the past two years in which the bulk of the expansion in cracking facilities is coming from refineries which had previously had units in operation. After experimenting for a few months with one or more units it is common practice for a refiner to install additional units so as to obtain the maximum capacity justified by the crude capacity of his refinery.

Occasionally a new refinery is added to the list of those with cracking units. During the past year, these new installations have generally been at small plants as practically all of the major refineries have had at least a small cracking capacity for two or more years. This rule applies even in California which has had the most spectacular increase in cracking during the past few months. The Standard Oil Co. of California, which is now installing a large number of new cracking units, has had experimental units in operation for several years and

JERSEY STANDARD LARGEST REFINER IN OIL INDUSTRY

The Standard Oil Co. of New Jersey is the largest refinery organization of the oil industry. Without including any of its subsidiary organizations the company operates six refineries with a combined crude capacity of 231,000 barrels daily. The same plants have a cracking capacity of 188,500 barrels daily.

The plants are located at Bayonne, Linden, and Jersey City, N. J., Baltimore, Md., Charleston, S. C. and Parkersburg, West Va. Two subsidiary organizations—the Humble Oil and Refining Co. of Texas and the Standard Oil Co. of Louisiana—are also among the major refinery organizations.

ARIZONA

Name and General Offices—	President	Vice President	Secretary	Treasurer
Rio Grande Oil Co., Los Angeles, Calif.	L. E. Lockhart	A. M. Lockhart	L. M. Lockhart	Charles S. Jones

ARKANSAS

Henry H. Cross Co., 936 Peoples Gas Bldg., Chicago	H. H. Cross	George F. Fox	L. L. Dent	
Houston Oil Co., Scanlan Bldg., Houston, Tex.	E. H. Buckner	L. S. Zimmerman	A. H. Kenmerly	L. S. Zimmerman
Kettle Creek Refining Co., Atlas Life Bldg., Tulsa, Okla.	W. B. Hassett	S. H. Fredericks	D. N. Cleek	W. B. Hassett
Lion Oil & Refining Co., Kansas City, Mo.	E. C. Winters	[1]H. M. Breidenthal	H. M. Breidenthal	E. C. Winters
Newark Refining Co., Eldorado	Alfred MacMillan	R. A. Fehlman	G. G. Dimick	P. E. Fehlman
Ouachita Valley Refining Co., Eldorado	John E. Shatford	Edward V. Stockham	Eloise Wall	C. L. Crenshaw
Root Refineries, Inc., Shreveport, La.	D. S. Brooks	D. P. Hamilton	D. P. Hamilton	D. S. Brooks

[1]E. D. Ellison, vice president Lion Oil & Refining Co.

The Simms Oil Co. of Dallas, Tex., (Magnolia Bldg.) is building a 5,000-bbl. skimming and cracking plant at Smackover.

CALIFORNIA

Associated Oil Co., 79 New Montgomery Street, San Francisco	Axtell J. Byles	[1]A. C. McLaughlin	P. G. Williams	W. A. Sloan
Associated Oil Co., 79 New Montgomery Street, San Francisco	See above			
Associated Oil Co., 79 New Montgomery Street, San Francisco	See above			
California Petroleum Corp., Security Building, Los Angeles	Jacques Vinmont	[2]F. C. van Deinse	D. E. O'Brien	W. D. Stewart
California Petroleum Corp., Security Building, Los Angeles	See above			
California Petroleum Corp., Security Building, Los Angeles	See above			
Dominion Oil Co., California Bank Building, Los Angeles	G. Allan Hancock	Raymond W. Stephens	E. A. Olson	E. A. Olson
East-West Refining Co., 1815 South Soto Street, Los Angeles	B. F. Alps	R. E. Ahlport	R. W. Norton	R. W. Norton
Eureka Refining Co., P. O. Box 6, Station K, Los Angeles	E. L. Pauley	E. W. Pauley	M. O. Sohus	M. O. Sohus
General Petroleum Corp. of California, Higgins Building, Los Angeles	Lionel T. Barneson	[2]R. A. Sperry	C. R. Stevens	J. Leslie Barneson
General Petroleum Corp. of California, Higgins Building, Los Angeles	See above			
General Petroleum Corp. of California, Higgins Building, Los Angeles	See above			
Gilmore Oil Co., 2423 East Twenty-eighth Street, Los Angeles	E. B. Gilmore	C. S. Beesemeyer	S. M. Salisbury	C. S. Beesemeyer
Gilmore Oil Co., 2423 East Twenty-eighth Street, Los Angeles	See above			
Hancock Oil Co., Security Building, Long Beach	W. J. Reid	J. W. Hancock	W. N. Reagan	A. C. Malone
Hercules Gasoline Co., Santa Fe Avenue, Los Angeles	A. Mattei		S. W. Harklewad	A. Mattei, Jr.
Hercules Gasoline Co., Santa Fe Avenue, Los Angeles	See above			
Julian Petroleum Corp., Pacific-Southwest Bank Building, Los Angeles	S. C. Lewis			
MacMillan Petroleum Products Co., 510 West Sixth Street, Los Angeles	R. S. MacMillan	H. R. MacMillan	S. M. Batterson	Dewitt Knox
Julian Petroleum Corp., Pacific-Southwest Bank Building, Los Angeles	S. C. Lewis			
Olympic Refining Co., Burnett	C. P. Ritter	W. W. Shorthill	D. T. Buckley	D. T. Buckley
Pan American Petroleum Co., Los Angeles	J. C. Anderson	[3]Chas. E. Harwood	Fred Ritter	E. L. Doheny, Jr.
Paraffine Cos., Inc., The, 475 Braman Street, San Francisco	R. S. Moore	R. S. Shainwald	R. H. Ohea	S. C. Irvin
Pioneer Paper Co., Inc., 5500 S. Alameda St., Los Angeles	W. G. Hunt	William Henry		H. M. Eichelberger
Richfield Oil Co. of California, Bartlett Building, Los Angeles	J. A. Talbot	[4]C. M. Fuller	C. A. Madary	J. S. Wallace
Richfield Oil Co. of California, Bartlett Building, Los Angeles	See above			
Richfield Oil Co. of California, Bartlett Building, Los Angeles	See above			
Richfield Oil Co. of California, Bartlett Building, Los Angeles	See above			
Richfield Oil Co. of California, Bartlett Building, Los Angeles	See above			
[5]Rio Grande Oil Co., 714 South Hill Street, Los Angeles	L. E. Lockhart	[1]A. M. Lockhart	L. M. Lockhart	Charles S. Jones
Seaboard Petroleum Corp., 2474 East Ninth Street, Los Angeles	A. L. Black	J. M. Feldman	Howard M. Miles	
Seaside Oil Co., Summerland	A. M. Heineman	J. F. Bushnell	M. W. O'Brien	J. F. Bushnell

Refinery Operations in United States

crease in Capacity During Past Year with 33 Fewer omplete Data on Operations and Personnel Given.

the other expansion is coming from the larger refiners which had a small cracking capacity early in 1926. The only exception to this situation is the California Petroleum Corp., which is now installing its first cracking units at one of its California refineries.

Although as shown in Table 1 more operating refineries (175) do not have cracking equipment than do (158), the latter are by far the most important considered as a unit as they include practically all of the major plants. From the standpoint of crude capacity, they have over two-thirds of the total for the entire United States. This means that refineries with cracking plants, if the crude oil production was properly distributed, could refine all the crude now being manufactured into petroleum products.

Position of Small Plants

The 175 refineries not having cracking equipment for the most part are small plants located in the Pennsylvania, Mid-Continent and California fields. The larger refineries without cracking units are generally those which specialize in the manufacture of asphalts or are plants which top crude to secure fuel oil, the tops being finished at some other refinery.

In the Pennsylvania area where the oldest refineries of the industry are operating, there are a large number of

(Continued on Page 140)

ABBREVIATIONS USED IN TABLES

Complete plant (Comp.)—Gasoline, kerosene, gas and fuel oils, lubricating oils, paraffin wax, petroleum coke, asphalt or both coke and asphalt, usually includes cracking. In Pennsylvania some plants listed as complete do not manufacture asphalt or coke.
Skimming plant (S)—Gasoline, kerosene, gas and fuel oils.
Skimming and lube (S&L)—Gasoline, kerosene, gas and fuel oils, lubricating oils.
Skimming and asphalt (S&A)—Gasoline, kerosene, gas and fuel oils, asphalt.
Skimming, lube and asphalt (SL&A)—Gasoline, kerosene, gas and fuel oils, lubricating oils, asphalt.
Wax plant (Wax)—Gasoline, kerosene, gas and fuel oils, lubricating oils, paraffin wax.
Lub plant (L)—Gas and fuel oils, lubricating oils.
Asphalt plant (A)—Distillates, gas and fuel oils, asphalt.
Topping plant (T)—Tops, distillates, gas and fuel oils.
Cracking (C)—Same products as skimming.

CRACKING PROCESS

Following is a list of cracking processes, including owners and sales representatives:
Burton—Standard Oil Co. of Indiana, 910 South Michigan Avenue, Chicago, Ill.
Cross—Gasoline Products Co., 700 Baltimore Avenue, Kansas City, Mo.; M. W. Kellogg Co., 7 Dey Street, New York, N. Y. Latter company controls process covered by Black patents.
Dubbs—Universal Oil Products Co., 310 South Michigan Ave., Chicago, Ill.
Fleming—M. W. Kellogg Co., 7 Dey Street, New York, N. Y.
Holmes-Manley—The Texas Company, 17 Battery Place, New York, N. Y.
Isom—Sinclair Rening Co., 45 Nassau Street, New York, N. Y.
Jenkins—Jenkins Petroleum Process Co., 844 Rush Street, Chicago, Ill.; Graver Corp., East Chicago, sales representative.
Tube & Tank—Standard Oil Co. of New Jersey, 26 Broadway, New York, N. Y.
In addition to the above, there are several processes listed in the following tables which are generally owned by the companies operating the refineries at which they are installed.

TABLE 2—Refining Capacity in the United States; Recapitulation by States

(Capacities given in barrels daily.)

States—	No. of Plants	Daily Crude Capacity	Plants Oper'g	Capacity Oper'g Plants	Shut Down Plants	Capacity Shut Down Refineries	*Plants With Crack. Proc'es	*Cracking Capacities
Arizona	1	3,000	1	3,000	...	.....	...	.....
Arkansas	10	32,000	7	30,000	3	2,000	5	14,050
California	74	838,957	47	776,717	27	62,240	9	91,500
Colorado	3	3,450	3	3,450	...	.....	2	1,900
Georgia	1	4,500	1	4,500	...	.....	1	665
Illinois	13	112,400	10	100,400	3	12,000	8	61,300
Iowa	1	1,500	...	.....	1	1,500	...	.....
Indiana	7	102,800	4	98,500	3	4,300	4	100,000
Kansas	26	122,200	15	104,500	11	17,700	14	63,600
Kentucky	14	24,540	8	19,100	6	5,440	5	7,700
Louisiana	20	225,600	11	205,300	9	20,300	5	59,300
Maryland	3	45,000	3	45,000	...	.....	3	43,200
Massachusetts	3	54,000	3	54,000	...	.....	2	15,500
Minnesota	1	1,000	...	.....	1	1,000	...	.....
Missouri	4	17,500	3	15,000	1	2,500	2	16,000
Montana	15	21,600	13	19,850	2	1,750	1	800
New Jersey	8	263,000	8	263,000	...	.....	6	139,900
New York	4	35,500	4	35,500	...	.....	2	12,000
New Mexico	7	6,500	4	4,200	3	2,300	...	.....
Ohio	15	56,700	13	54,250	2	2,450	8	33,000
Oklahoma	71	320,850	45	261,400	26	60,950	26	98,900
Pennsylvania	54	178,310	49	175,910	5	2,400	20	80,195
Rhode Island	2	12,500	2	12,500	...	.....	1	8,700
South Carolina	1	15,000	1	15,000	...	.....	1	28,855
Tennessee	1	250	...	.....	1	250	...	.....
Texas	78	584,650	53	527,700	25	56,550	23	282,900
Utah	2	4,750	2	4,750	...	.....	1	5,000
Virginia	1	2,500	1	2,500	...	.....	...	.....
Washington	1	1,000	1	1,000	...	.....	...	.....
West Virginia	4	9,000	4	9,000	...	.....	2	7,825
Wyoming	12	84,600	8	81,300	4	3,300	7	68,100
Total	455	3,185,257	323	2,926,327	132	258,930	158	1,240,890

*Operating plants only.

	General Manager	Plant Supt.	Sales Manager: Tank Car	Sales Manager: Bulk & Serv. Sta.	Name of Company	Plant Loc.	Crude Cap.	Type Plant	Crack. Cap.	Type C. Unit
ARIZONA										
rer	Jones	Lynn Lockhart	J. N. Reed	J. N. Reed	Rio Grande Oil Co.	Phoenix	3,000	S		
ARKANSAS										
	George F. Fox	C. L. Murphy			Henry H. Cross Co.	Smackover	4,000	S		
nerman	A. W. Standing	George H. Hartung	Harvey S. Smith	F. E. Smith	Houston Oil Co.	Camden	3,000	C	3,000	Dubbs
ssett	W. B. Hassett	J. W. Johnson	R. M. Moon		Kettle Creek Refining Co.	El Dorado	6,000	S&C	2,000	Dubbs
ters		Sylvester Dayson	F. E. O'Byrne	J. R. Murphy	Lion Oil & Refining Co.	El Dorado	12,000	SL&A	5,000	Burton
lman		E. L. Corah			Newark Refining Co.	El Dorado	1,500	S		
shaw	John E. Shatford	R. H. DeLano	C. L. Crenshaw		Ouachita Valley Ref. Co.	El Dorado	1,000	S&C	750	Dubbs
oks		Ed Kimes	James L. Geraghty		Root Refineries, Inc.	El Dorado	2,500	S&C	1,800	Dubbs
a 5,000-bbl.										
CALIFORNIA										
		W. P. Hugo	E. Whitehead	A. P. MacKillop	Associated Oil Co.	Avon	50,000	ST&L		
		F. E. Coyle			Associated Oil Co.	Amorco	10,000	S		
					Associated Oil Co.	Watson	10,000	S		
art	C. E. Olmstead		C. L. Coppage	C. L. Coppage	California Pet. Corp.	Wilmington	30,000	T	3,000	Holmes-Manley
					California Pet. Corp.	Coalinga	1,000	T		
					California Pet. Corp.	Fillmore	5,000	L&W		
	J. H. Chapman	R. M. Stephens			Dominion Oil Co.	Los Angeles	750	S		
on	R. F. Alps	R. E. Ahlport	R. E. Ahlport	R. E. Ahlport	East-West Ref. Co.	Los Angeles	1,000	S&T		
		George W. Miller			Eureka Ref. Co.	Los Angeles	5,000	Comp.	5,000	Eureka
rneson	R. A. Sperry	[12]H. J. Barneson	William Walker	William Walker	General Pet. Corp. of Calif.	Vernon	50,000	Comp.		
					General Pet. Corp. of Calif.	Lebec	10,000	T		
					General Pet. Corp. of Calif.	Olinda	2,500	T		
eyer		W. C. Minger	J. L. Coates	B. A. Rowell	Gilmore Oil Co.	Vernon	3,500	S		
		Scott Beach			Gilmore Oil Co.	Los Angeles	2,500	A		
	J. W. Hancock	H. D. Tupper	George D. Williams		Hancock Oil Co.	Signal Hill	6,000	S		
r.	C. R. Bird	Platt May	S. W. Lewis	G. D. McDonald	Hercules Gasoline Co.	Vernon	5,000	S		
					Hercules Gasoline Co.	Torrance	3,000	S		
					Julian Petroleum Corp.	Hynes	6,000	S		
		C. C. Benz	D. J. Peters		MacMillan Pet. Products Co.	Signal Hill	4,000	S		
					Julian Petroleum Corp.	Vernon	10,000	S		
	C. P. Ritter	T. J. Ryan			Olympic Refining Co.	Burnett	5,000	S		
y	J. C. Anderson	W. D. Rial	James T. Armitage	Jas. T. Armitage	Pan American Pet. Co.	Watson	70,000	Comp.	10,000	Black
, Jr.	R. S. Shainwald	O. H. Robertson	B. J. Williams		Paraffine Cos. Inc. The	Emeryville	1,200	A		
lberger					Pioneer Paper Co.	Vernon	200	A		
	C. M. Fuller	R. A. Panero	J. C. Graves	J. C. Graves	Richfield Oil Co. of Calif.	Hynes	30,000	S&C	4,000	Cross
		T. B. Holloran			Richfield Oil Co. of Calif.	Los Angeles	8,500	S		
		O. W. Gaylor			Richfield Oil Co. of Calif.	Hunt'gton Bch.	5,000	S		
		G. B. Slater			Richfield Oil Co. of Calif.	Fellows	6,667	T		
		E. E. McCutcheon			Richfield Oil Co. of Calif.	Bakersfield	1,500	S		
		J. J. Downey	J. N. Reed	J. N. Reed	Rio Grande Oil Co.	Los Angeles	5,000	S		
nes	J. M. Feldman	W. Rarrison		W. G. Harton	Seaboard Pet. Corp.	Los Angeles	2,500	S		
l	J. F. Bushnell	D. C. Peet		Winslow Bushnell	Seaside Oil Co.	Summerland	2,000	A		

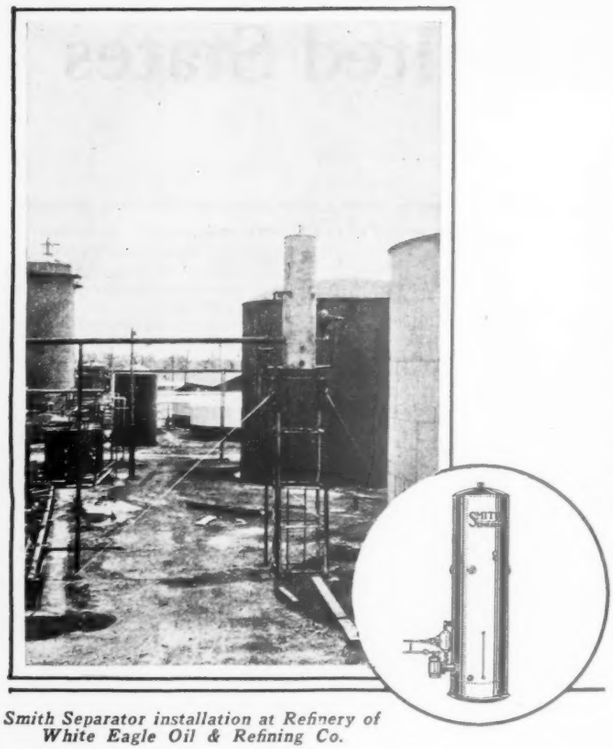
TO THE

The Smith Separator Company handles a line of equipment that practice has proven to be of economical value to every refiner.

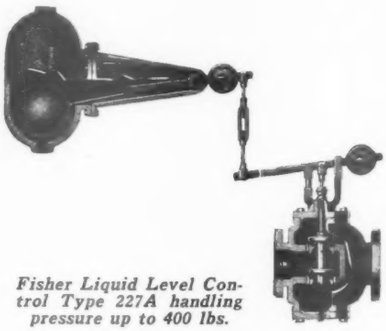
Smith Oil and Gas Separators

Refiners are using Smith Separators to secure the final separation of oil and gas at the refinery.

Photo at left shows installation of a Smith Separator at the refinery of the White Eagle Oil and Refining Company, to handle all gasoline from 20 Burton Stills, saving gas for five boilers developing 250 H. P.



Smith Separator installation at Refinery of White Eagle Oil & Refining Co.

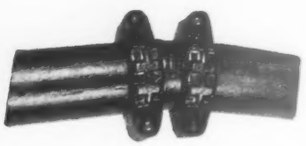


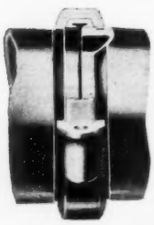
Fisher Liquid Level Control Type 227A handling pressure up to 400 lbs.

Fisher Equipment

Fisher refinery equipment is standard with practically every refiner in the industry.

Practically every piece of Fisher Equipment which is considered standard today was originally built to meet some refining need. Service on the job made it standard.





Victaulic Couplings

This new, sensational pipe coupling has become a popular favorite with pipe line companies, refiners . . . with everyone using pipe lines for any purpose.

Its simplicity of construction . . . ease of laying with unskilled labor . . . speed of handling the laying of line . . . all combine to make it popular wherever used.

Unskilled labor can lay line faster with Victaulic Couplings.

SMITH SEPARATOR COMPANY
Tulsa Okla.

American-Marsh Pumps

Users of centrifugal pumps have come to recognize in American-Marsh multi-stage centrifugal pumps, for refinery use, a type of high-efficiency, low operating-cost equipment that meets every centrifugal requirement.

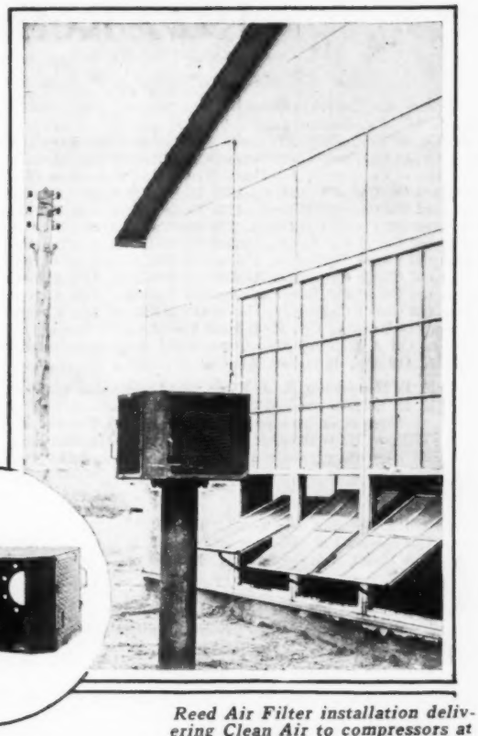
American-Marsh Pumps are precision built, long-lived and render high efficiency over long periods of time under the most severe working conditions.

REFINER

Reed Air Filters

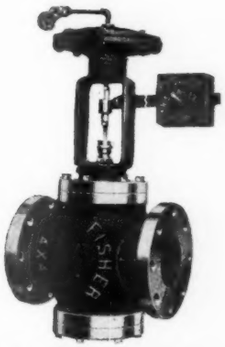
Reed Air Filters are delivering clean, dust free air to compressors and engines throughout practically every branch of the Oil Industry.

The saving effected from the use of Reed Air Filters, by saving costly repairs and shut-down time on engines and compressors have made this equipment popular wherever tested.

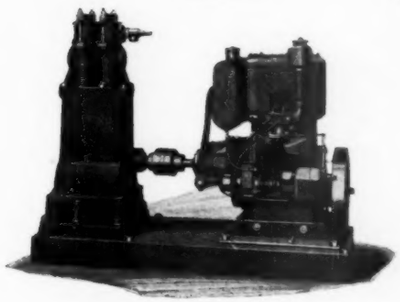


Reed Air Filter installation delivering Clean Air to compressors at Marland Oil Company plant.

Fisher Remote Control Type 240. The only valve of its kind available for handling liquid level remote controls under any pressure or temperature.

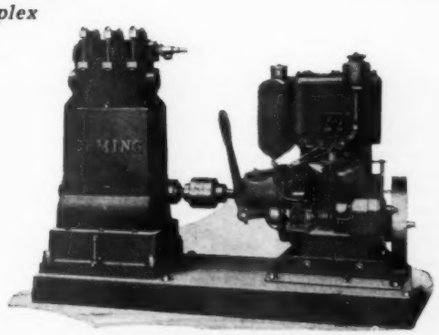


Fisher Pressure Reducing Valve Type 10, popular because of wide variety of uses.



Type 992 Duplex

Send for Our Catalogue



Type 993 Triplex

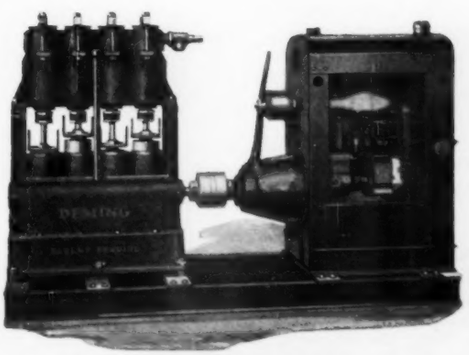
SMITH SEPARATOR COMPANY
Tulsa Okla.

Deming Pumps

Since its introduction to the Oil Industry, the new Deming Type "99" portable pump has become a great favorite among those who have need for a high-efficiency, direct-power-connected unit.

Built in Duplex, Triplex and Quadruplex types, varying capacities to meet any need.

All the equipment listed is distributed by the Smith Separator Company.



Type 994 Quadruplex

1927 Refinery Survey, Covering Personnel of Compa

CALIFORNIA (Contin

Name and General Offices—	President	Vice President	Secretary	Treasurer
Seaside Oil Co., Summerland	See above			
Shell Co. of California, 200 Bush Street, San Francisco	C. Legh-Jones	[10]H. R. Gallagher	G. C. Noble	John Lauder
Shell Co. of California, 200 Bush Street, San Francisco	See above			
Shell Co. of California, 200 Bush Street, San Francisco	See above			
Standard Oil Co. of California, 225 Bush Street, San Francisco	K. R. Kingsbury	[5]F. H. Hillman	J. H. Tuttle	R. C. Warner
Standard Oil Co. of California, 225 Bush Street, San Francisco	See above			
Standard Oil Co. of California, 225 Bush Street, San Francisco	See above			
Union Oil Co. of California, Union Oil Building, Los Angeles	W. L. Stewart	[2]E. W. Clark	John McPeak	R. J. Keown
Union Oil Co. of California, Union Oil Building, Los Angeles	See above			
Union Oil Co. of California, Union Oil Building, Los Angeles	See above			
Union Oil Co. of California, Union Oil Building, Los Angeles	See above			
Union Oil Co. of California, Union Oil Building, Los Angeles	See above			
Vernon Oil Refining Co., 2500 East Twenty-sixth Street, Los Angeles	J. A. Brower	H. S. Penn	W. N. Brower	W. N. Brower
Western Oil & Refining Co., Commercial Exchange Building, Los Angeles	Richard Florian	[9]R. R. Rakestraw	A. A. G. Scherbel	A. A. G. Scherbel
Wilshire Oil Co., Inc., Los Angeles	George Machris	Alfred Machris	Victor Machris	Victor Machris

[1]F. B. Henderson, L. J. King, vice presidents, Associated Oil Co.
[2]R. E. Bering, Fred V. Gordon, C. E. Olmstead, C. L. Coppage, L. B. O'Neil, R. M. J. Armstrong, vice presidents, California Petroleum Corp.
[3]William B. Walker, R. E. Maynard, W. L. McLaine, vice presidents, General Petroleum Corp.; John Barneson, chairman of the board.
[6]Cecil A. Elliott, E. L. Doheny, Jr., vice presidents, Pan American Petroleum Co.
[6]John McKeon, J. S. Wallace, vice presidents, Richfield Oil Co. of California.
[7]Charles S. Jones, L. M. Lockhart, vice presidents, Rio Grande Oil Co.
[8]R. J. Hanna, H. M. Storey, H. T. Harper, vice presidents Standard Oil Co. of California.

COLORADO

Raven Oil & Refining Co., Vernal, Utah	John W. Leonard	F. G. Cary	R. A. Bryson	R. A. Bryson
Texas Company, The, Houston, Texas	See Texas			
United Oil Co., Continental Bldg., Denver	S. H. Keoughan	W. H. Ferguson	H. P. Ferree	George F. Smith

GEORGIA

Atlantic Refining Co., 260 Broad St., Philadelphia, Pa.	See Pennsylvania			

ILLINOIS

Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.	Arthur W. Sewall	[1]Frank Seamans	E. R. Riter	Ira Atkinson
Indian Refining Co., Lawrenceville	J. H. Graham	[2]Geo. C. Armstrong	D. G. Siemer	R. J. Dillon
Lemont Refining Co., Chicago	C. E. Lewis		H. A. Gardner	A. W. Evans
Lincoln Oil Refining Co., Robinson	J. K. Kerr	H. B. Carpenter	W. B. Filson	F. A. Billstone
Lubrite Refining Co., 3504 Washington Blvd., St. Louis, Mo.	W. W. Strickler	[3]H. T. Ashton	A. T. Alison	A. T. Alison
Red River Refining Co., Chicago	Thomas Flynn	R. S. Todd	John E. Schulze	R. S. Todd
Roxana Petroleum Corp., Shell Bldg., St. Louis	F. Godber	T. F. Lydon	P. R. Chenoweth	T. F. Lydon
Standard Oil Co. of Indiana, 910 Michigan Ave., Chicago	See Indiana			
Texas Company, The, Houston	See Texas			
White Star Refining Co. of W. Va., 5950 Avery Ave., Detroit, Mich.	H. B. Earhart	J. B. Edwards	W. V. Butler	W. V. Butler

[1]C. W. Bayless, A. L. Robinson, vice presidents, Barber Asphalt Co.
[2]Frank Fritts, B. H. Anglin, vice presidents, Indian Refining Co.

INDIANA

Bartles-Maquire Oil Co., Milwaukee, Wis.	A. G. Maguire	[1]H. J. Stolz	R. W. Fritzke, Jr.	R. W. Fritzke, Jr.
Sinclair Refining Co., 45 Nassau St., New York	E. W. Sinclair	[3]W. H. Isom	A. Steinmetz	J. F. Tanell
Standard Oil Co. of Indiana, 910 S. Michigan Ave., Chicago	Wm. M. Burton	[2]J. D. Clark	E. G. Seubert	E. G. Seubert
Roxana Petroleum Corp., St. Louis, Mo.	F. Godber	F. F. Lydon	P. R. Chenoweth	T. F. Lydon

[1]F. H. Mayfield, J. M. McLaughlin, William Hildebrant, vice presidents, Bartles-Maguire Oil Co.
[2]Allan Jackson, E. G. Seubert, B. Parks, W. E. Warrick, vice presidents, Standard Oil Co. of Indiana; Robert W. Stewart, chairman of the board.

KANSAS

Barnsdall Refineries, Inc., Petroleum Bldg., Tulsa, Okla.	See Oklahoma			
Derby Oil Co., Wichita	A. L. Derby	[1]E. C. Moriarity	E. Wasser	E. C. Claiborne
Eldorado Refining Co., Eldorado	C. G. Yankey	R. H. Hazlett	T. A. Helling	R. H. Bradford
Golden Rule Refining Co., Wichita	Elbert S. Rule		W. C. Long	W. C. Long
Kanotex Refining Co., Arkansas City	John McE. Ames	C. M. Boggs	E. K. Childers	Robert R. Cox
Manhattan Oil Co., Security Bldg., Kansas City, Mo.	E. W. Goebel	J. P. Howe	James F. Getty	E. L. Martin
National Refining Co., 1404 East Ninth, Cleveland, Ohio	See Ohio			C. O. Nelson
Peerless Oil & Refining Co., Chanute	F. E. Reinhardt	Elmer M. Cooper	C. O. Nelson	
Roxana Petroleum Corp., Shell Bldg., St. Louis, Mo.	See Illinois			
Sinclair Refining Co., 45 Nassau, New York	See Indiana			
Sinclair Refining Co., 45 Nassau, New York	See Indiana			F. T. Hopp
Skelly Oil Co., Skelly Bldg., Tulsa, Okla.	W. G. Skelly	F. A. Pielsticker	F. T. Hopp	E. A. Warren
Standard Oil Co. of Kansas, Neodesha	J. C. McDonald	A. S. Hopkins	E. A. Warren	J. S. Wertz
Vickers Petroleum Co., W-K-H Bldg., Wichita	J. A. Vickers	C. L. Henderson	J. S. Wertz	A. N. Allen
White Eagle Oil & Refining Co., Federal Reserve Bank Bldg., Kansas City, Mo.	L. L. Marcell	[2]H. F. Bagby	M. T. Jones	

[1]Vice president, Derby Oil Co.
[2]E. C. Marshall, General Superintendent of Refineries, White Eagle Oil & Refining Co.

KENTUCKY

Ashland Refining Co., Ashland	Thos. A. Combs	[1]T. A. Field	E. L. McDonald	Wm. A. Waples
Glasgow Oil & Refining Co., Glasgow	R. B. Tyler	T. P. Dickinson	Sewell C. Harlin	Sewell C. Harlin
Louisa Co. of Kentucky, Inc., The, Louisville		Curtis C. Webb	H. J. Flanders	A. T. Judy
Louisville Petroleum Refining Co., Louisville	W. M. Mitchell	C. C. Fix	F. A. Murphy	F. A. Murphy
Petroleum Refining Co., The, Latonia	A. W. Williamson		E. E. Stokes	E. E. Stokes
Standard Oil Co. of Kentucky, Louisville	S. W. Coons	[2]W. E. Smith	Thos. O. McGoodwin	Jos. C. Steidle
Stoll Oil Refining Co., Louisville	Chas. E. Stoll	[3]Geo. J. Stoll	Wm. A. Stoll	Wm. A. Stoll
Texas Company, The, Houston, Texas	See Texas			

[1]Paul G. Blazer, vice president, Ashland Refining Co.
[2]W. G. Violette, A. K. Whitelaw, vice president, Standard Oil Co. of Kentucky.

LOUISIANA

Crystal Oil Refining Corp., Shreveport	G. L. Estabrook	F. W. Burford	W. L. Lamont	W. L. Lamont
Chalmette Petroleum Corp., 1017 Union Indemnity Building, New Orleans	Felix P. Vaccaro	Joseph Vaccaro	R. P. Batson	R. P. Batson
Liberty Oil Co., Ltd., New Orleans	Thos. C. Anderson	H. D. Smith, Jr.	P. A. Lavedan	L. P. Samsot
Louisiana Oil Refining Corp., Shreveport	R. B. Kahle	[3]C. M. Bennett	C. R. Harrison	A. F. Whiting
Louisiana Oil Refining Corp., Shreveport	See above			
Mexican Petroleum Corp., 120 Broadway, New York	F. H. Wickett	[1]H. Walker	O. D. Bennett	A. N. Penn
New Orleans Refining Co., Inc., United Fruit Building, New Orleans	Richard Airey	[2]Alexander Fraser	Alexander Fraser	A. M. Houston
Shreveport Producing & Refining Corp., Commercial Bank Building, Shreveport	C. D. Keen	[4]J. B. Adkins	Bradford Hearn	Bradford Hearn

Companies and Plants Operating in the United States

CALIFORNIA (Continued)

Sales Managers										
General Manager	Plant Supt.	Tank Car	Bulk & Serv. Sta.	Name of Company	Plant Loc.	Crude Cap.	Type Plant	Crack. Cap.	Type C. Unit
				Seaside Oil Co.	Ventura	3,000	S		
	G. H. Van Senden	H. R. Gallagher	H. R. Gallagher	Shell Co. of California	Martinez	33,000	Comp.	8,000	Dubbs
	William Cameron			Shell Co. of California	Wilmington	50,000	Comp.	6,500	Dubbs
	G. H. Van Senden			Shell Co. of California	Coalinga	4,000	S		
				Standard Oil Co. of Calif.	Richmond	100,000	Comp.	21,000	Dubbs
				Standard Oil Co. of Calif.	El Segundo	100,000	Comp.	24,000	Dubbs
				Standard Oil Co. of Calif.	Bakersfield	25,000	S&A		
X. Boggs	[11]A. Roy Heise	J. M. Geary	J. M. Geary	Union Oil Co. of California	Oleum	27,500	SI&A		
	C. F. Jennings			Union Oil Co. of California	Brea	5,000	S		
	C. G. Brownlee			Union Oil Co. of California	Wilmington	50,000	SA&C	10,000	Cross
				Union Oil Co. of California	Santa Paula	900	S		
				Union Oil Co. of California	Bakersfield	3,000	S		
	H. S. Penn		C. W. Flint	Vernon Oil Ref. Co.	Los Angeles	2,500	S		
Richard Florian	E. J. McKee	A. A. G. Scherbel	A. A. G. Scherbel	Western Oil & Ref. Co.	Wilmington	10,000	S		
George Machris	A. Jones			Wilshire Oil Co.	Vernon	10,000	S		

[9]W. W. Orcutt, L. P. St. Clair, vice presidents; R. D. Matthews, comptroller, Union Oil Co. of California.
[10]A. W. Taylor, vice president, Western Oil & Refining Co.
[11]Director in charge of refining and transportation.
[12]Manager refining department. Fred Gaacs, general refinery superintendent.
[13]Superintendent of refineries, A. T. Page.
[14]S. M. Salisbury, vice president, Gilmore Oil Co.
[15]Refinery shut down temporarily.
[16]John Lauder, vice president, Shell Co. of California.

COLORADO

A. Bryson	R. A. Bryson			Raven Oil & Refining Co.	Rangely	200	S		
	G. O. Shefstead			Texas Company, The	Craig	750	Comp.	500	Holmes-Manley
	F. G. Knoch			United Oil Co.	Florence	2,500	SC&L	1,400	Burton

GEORGIA

				Atlantic Refining Co.	Brunswick	4,500	Comp.	665	Lewis

ILLINOIS

	M. S. Darrow	C. W. Bayliss	C. W. Bayliss	Barber Asphalt Co.	Madison	700	T&A		
H. Graham	P. W. Wells	B. H. Anglin	B. H. Anglin	Indian Refining Co.	Lawrenceville	18,000	Comp.	2,500	Dubbs
	J. F. Donnelly			Lemont Refining Co.	Lemont	1,200	S&C	10,000	Cross, Dubbs
L. Deming	R. E. Luton	N. T. Stover	N. T. Stover	Lincoln Oil Refining Co.	Robinson	5,000	Comp.	1,000	Lemont Process
T. Ashton	D. A. Windsor	Earl Whatley	W. H. Ware	Lubrite Refining Co.	East St. Louis	4,000	S&C	5,000	Holmes-Manley
homas Flynn	R. S. Watt	E. F. Buchanan	E. F. Buchanan	Red River Refining Co.	Burnham	500	L	1,200	Fleming
	F. W. L. Tydeman	G. G. Woodruff	J. Strong	Roxana Petroleum Corp.	Wood River	40,000	SC&L		
R. Manbeck	W. W. Holland			Standard Oil Co. of Ind.	Wood River	20,000	Comp.	15,000	Dubbs, Cross
	G. B. Bogart			Texas Company, The	Lockport	6,000	Comp.	20,000	Burton, Holmes-Man-
B. Edwards		C. B. McCullough	L. R. Hunter	White Star Ref. Co. of W. Va.	Wood River	5,000	S&C	6,600	Holmes-Manley [ley

[2]W. H. Ware, vice president, Lubrite Refining Co.

INDIANA

J. Stolz	William Hildebrandt	H. J. Stolz	J. M. McLaughlin	Bartles-Maguire Oil Co.	East Chicago	2,500	S&C	3,000	Jenkins
E. H. Taber, Jr.				Sinclair Refining Co.	East Chicago	20,000	SL&C	30,000	Isom
E. Cash	H. F. Glair			Standard Oil Co. of Indiana	Whiting	52,000	Comp.	60,000	B'rton, Homles-Man'y
	Dr. R. H. Waser	G. G. Woodruff	J. Strong	Roxana Petroleum Corp.	East Chicago	24,000	S&C	7,000	Dubbs

[1]J. M. Cudahy, A. E. Watts, J. R. Simpson, G. H. Taber, Jr., Sheldon Clark, E. W. Isom, J. W. Carnes, G. A. Braley, J. F. Tarrell, vice presidents, Sinclair Refining Co.; H. F. Sinclair, chairman of the board.
[4]Chairman of manufacturing committee.
[5]Manager of Whiting refinery.

KANSAS

	V. R. Oakley			Barnsdall Refineries	Wichita	5,000	T	2,500	Dubbs
L. Derby	E. Sapp	C. A. Keller		Derby Oil Co.	Wichita	5,000	S&C	2,300	Dubbs
A. Helling	G. C. Anderson	T. A. Helling		Eldorado Refining Co.	Eldorado	4,000	S		
Albert S. Rule	W. C. Long	W. C. Long		Golden Rule Refining Co.	Wichita	1,000	S&C	1,200	Jenkins
M. Boggs	F. A. Deering	W. L. Lesh		Kanotex Refining Co.	Arkansas City	9,000	S&C	2,200	Jenkins
W. Goebel	Frank E. Wellman	M. A. Lysaught		Manhattan Oil Co.	Kansas City, Ks.	6,000	S&C	1,500	Wellman
	H. B. Setzler		A. M. Counterman	National Refining Co.	Coffeyville	6,000	S&C	3,000	National
E. Reinhardt	C. A. Davis	G. S. Reinhardt		Peerless Oil & Refining Co.	Chanute	3,000	S&C	2,200	Jenkins
	A. C. Koenig		J. E. Lassman	Roxana Petroleum Corp.	Arkansas City	20,000	S&C	3,000	Dubbs
	B. J. Healy			Sinclair Refining Co.	Coffeyville	6,500	S&C	10,000	Isom
	George Bibbington			Sinclair Refining Co.	Argentine	8,000	S&C	10,000	Isom
	K. J. Smith	G. A. R. Slocum	W. T. Atkins	Skelly Oil Co.	Eldorado	15,000	S&C	10,000	Jenkins, Cross
S. Hopkins	E. A. Metcalf	P. H. Rohde		Standard Oil Co. of Kansas	Neodesha	12,000	SC&A	10,000	Burton
	A. M. Schrepfer	C. W. Rice		Vickers Petroleum Co.	Potwin	3,000	S&C	1,200	Dubbs
	[3]C. C. Durkee	H. L. McReynolds	R. D. Mering	White Eagle Oil & Ref. Co.	Augusta	6,000	S&C	2,500	Burton

[3]R. R. Trivin and E. A. Kermott, Vice Presidents, White Eagle Oil & Refining Co.

KENTUCKY

Paul G. Blazer	Chas. A. Jouett			Ashland Refining Co.	Leach	3,000	S&C	1,200	Dubbs
Sewell C. Harlin	M. R. Rippy			Glasgow Oil & Refining Co.	Glasgow	200	S		
Curtis C. Webb	A. T. Judy	H. J. Flanders	W. B. Leggett	Louisa Co. of Ky., Inc., The	Louisville	2,400	S&C	400	Fleming
W. M. Mitchell	C. A. Edwards	H. B. Hammond	H. B. Hammond	Louisville Pet. Ref. Co.	Louisville	2,500	S&C	2,100	Dubbs
E. E. Stokes	Thos. S. Danks			Petroleum Ref. Co., The	Latonia	2,000	S&C	1,000	Cross
	W. Exton	W. E. Smith	W. G. Violette	Standard Oil Co. of Ky.	Louisville	5,000	S&C	3,000	Burton
	Jack W. Kittner	Berry V. Stoll	Geo. J. Stoll	Stoll Oil Ref. Co.	Louisville	1,000	L		
	W. H. Hoffman			Texas Company, The	Pryse	3,000	Comp.		

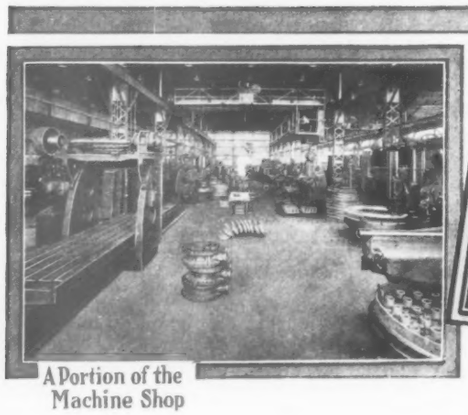
[1]Berry V. Stoll, Charles E. Stoll, vice presidents, Stoll Oil Refining Co.

LOUISIANA

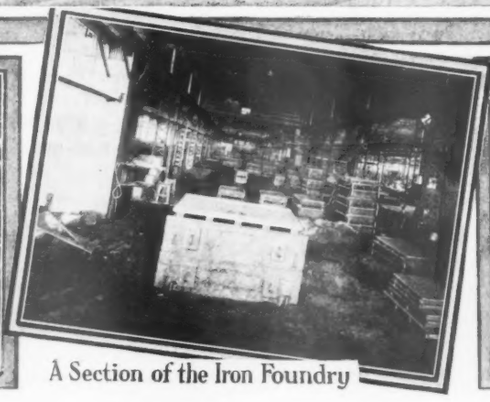
F. W. Burford	D. H. Christman	R. E. Bishop	W. I. Williams, Jr.	Crystal Oil Ref. Corp.	Shreveport	10,500	S	2,000	Jenkins
R. P. Batson	John Alphonso	Geo. P. Gillette	Geo. P. Gillette	Chalmette Petroleum Corp.	Chalmette	5,000	S		
L. P. Samsot	G. H. Carringer	H. D. Smith, Jr.	L. P. Samsot	Liberty Oil Co., Ltd.	New Orleans	4,000	S		
W. A. Soars	D. F. Gerstenberger	G. B. Davies	F. E. Wilkerson	Louisiana Oil. Ref. Corp.	Bossier City	17,000	C&A	14,000	Tube and Tank
	F. N. Williams			Louisiana Oil. Ref. Corp.	Gas Center	8,000	S		
				Mexican Pet. Corp. of La.	Destrahan	25,000	S&A		
L. Van Eeghen	R. B. High	L. Van Eeghen		New Orleans Ref. Co., Ltd.	Good Hope	20,000	S&A	1,800	Dubbs
J. B. Atkins	E. J. Mary	R. R. Brinkman		Shreveport Prod. & Ref. Corp.	Shreveport	5,000	S	1,500	Dubbs, Jenkins

C.F.BRAUN & CO.

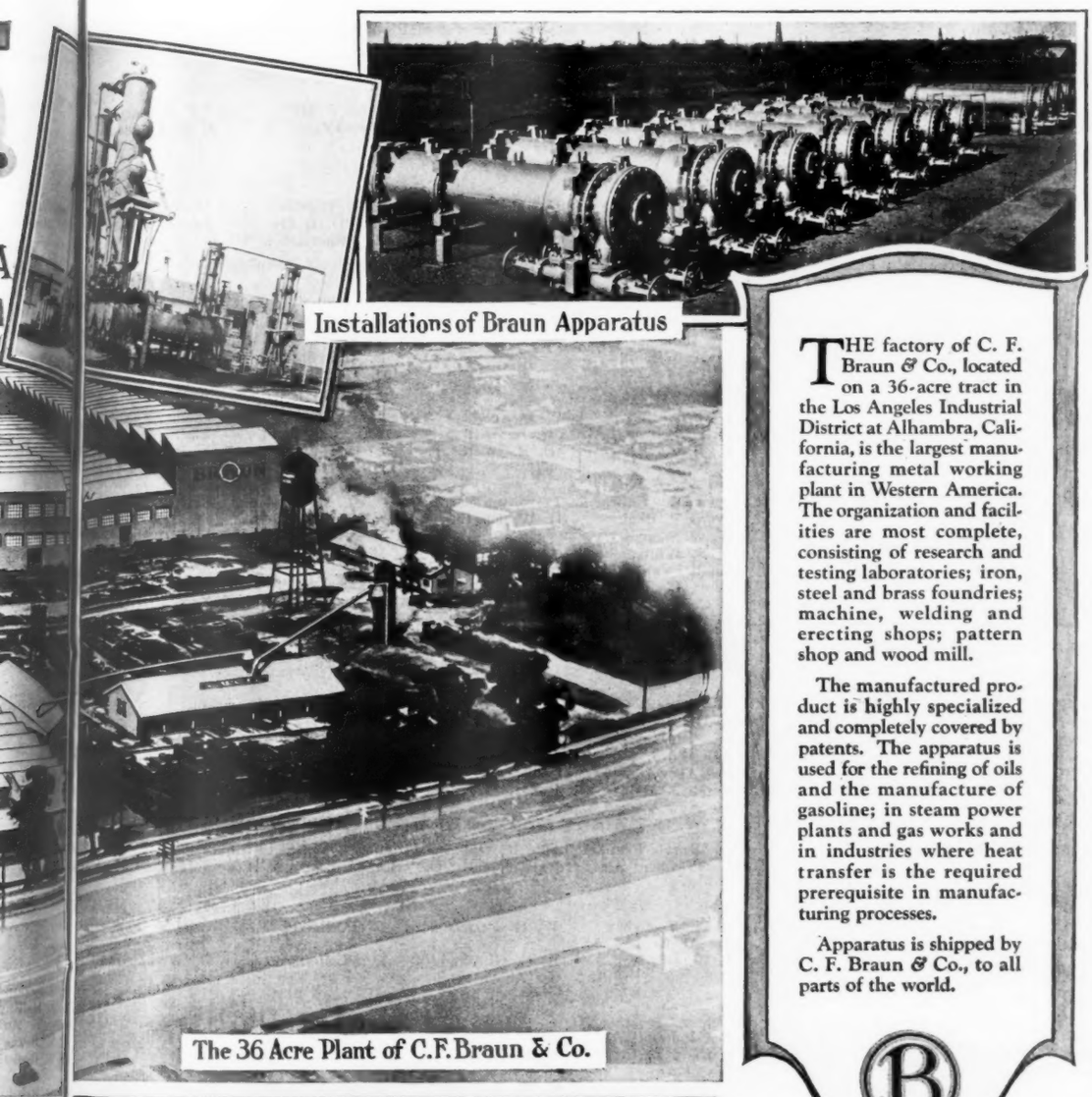
LARGEST METAL WORKING MANUFACTURING PLANT IN WESTERN AMERICA



A Portion of the Machine Shop



A Section of the Iron Foundry



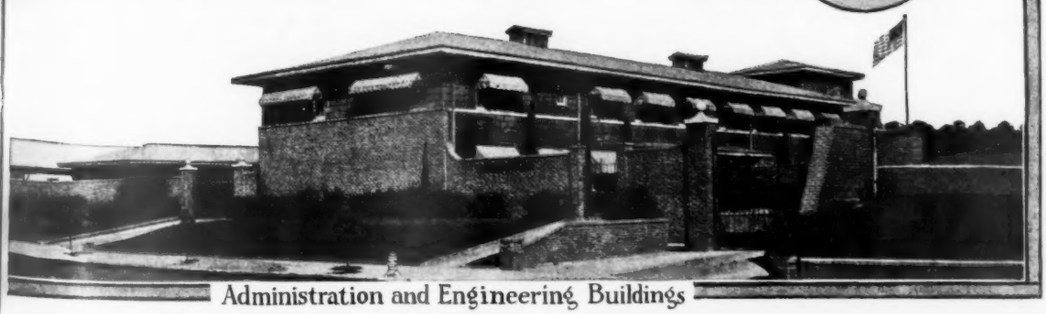
Installations of Braun Apparatus

The 36 Acre Plant of C.F.Braun & Co.

THE factory of C. F. Braun & Co., located on a 36-acre tract in the Los Angeles Industrial District at Alhambra, California, is the largest manufacturing metal working plant in Western America. The organization and facilities are most complete, consisting of research and testing laboratories; iron, steel and brass foundries; machine, welding and erecting shops; pattern shop and wood mill.

The manufactured product is highly specialized and completely covered by patents. The apparatus is used for the refining of oils and the manufacture of gasoline; in steam power plants and gas works and in industries where heat transfer is the required prerequisite in manufacturing processes.

Apparatus is shipped by C. F. Braun & Co., to all parts of the world.



Administration and Engineering Buildings

1927 Refinery Survey, Covering Personnel of C

LOUISIAN

Name and General Offices—	President	Vice President	Secretary	Treasurer
Sinclair Refining Co., 45 Nassau St., New York	See Indiana			
Texas Company, The, 17 Battery Place, New York	C. K. Clark	[1]C. O. Scholder	A. K. Gordon	A. K. Gordon
Texas Company, The	See Texas			

[1]M. J. Grogan, vice president, Louisiana Oil Refining Corp.
[2]L. Van Eeghen, vice president, New Orleans Refining Co., Inc.
[3]Guy Oakes, vice president, Shreveport Producing & Refining Corp.
[4]Manager refining department.

MARYLAND

Interocean Oil Co., Baltimore	C. Wilbur Miller	Geo. N. Snedden	Ralph J. Gill	J. C. Kissick
Prudential Oil Corp., 90 West Street, New York, N. Y.	J. O. Jensen	W. V. Griffin	Elton Parks	E. W. Freeman
Standard Oil Co. of New Jersey, 26 Broadway, New York, N. Y.	See New Jersey			

MASSACHUSET

Beacon Oil Co., Everett	Richard B. Kahle	[1]W. F. Dunning	H. W. Boutilier	W. F. Dunning
Cities Service Refining Co., Boston	Henry L. Doherty	[2]Harry D. Frueauff	John D. Griffin	Louis F. Musil
New England Oil Refining Co., Boston	Warwick Greene	[3]D. T. Schultz	Hoyt Sherman	

[1]George E. Hite, Jr., E. N. Wrightington, L. J. Walsh, vice presidents, Beacon Oil Co.
[2]John S. Cordell, vice president, Cities Service Refining Co.

MISSOURI

Alliance Rubber Producing Co., Kansas City	H. R. Ennis	John H. Darrah	Hugh R. Ennis	Fred L. Cotton
Standard Oil Co. of Indiana, 910 Michigan Ave., Chicago	See Indiana			
Wilhoit Refining Co., Joplin	E. M. Wilhoit		D. A. Wilhoit	D. A. Wilhoit

MONTANA

Absher Refineries, Inc., Kevin	J. E. Freeley	A. L. Freeberg	James McMillan	H. E. Landeen
Arro Oil & Refining Co., W. Lewistown	H. H. Schwartz, Jr.	[1]E. L. Allen	Guy R. Enlow	Ed L. Allen
Big West Oil Co., 614 Hutton Bldg., Spokane, Wash	W. S. Hawley	[2]E. R. Northrup	L. R. Hawley	L. R. Hawley
Hart Refineries, Missoula	C. W. Hart		E. G. Hart	E. G. Hart
Hart Refineries, Hedges	See Above			See Above
International Refining Co., Sunburst	Owned by California Petroleum Corp.			See California
Lewistown Oil & Refining Co., Lewistown	Frank P. Book	C. W. Buntin	Addison E. Holton	H. L. Wadsworth
Reliance Refining Co., Kalispell	W. G. Stearns		Max Grier	Max Grier
Round Up Oil & Refining Co., Butte	A. B. Whitcomb	A. D. Whitcomb	M. A. Whitcomb	M. B. Whitcomb
Silver Bow Refining Co., Butte	Small local refinery operating part time.			
Snow Cap Oil Co., Sunburst	Adam J. Eulberg	Edward F. Eulberg	Benj. A. Eulberg	
Sunburst Refining Co., Great Falls	L. C. Stevenson	[1]M. C. Henderson	Wm. Geo. Davis	J. H. Stevenson
Yale Oil Corp. of South Dakota, Miles City	L. B. Hancock	John Hancock	P. N. Fortin	

[1]J. H. Stevenson, George E. Hurd, vice presidents, Sunburst Refining Co.
[2]Jake Hill, Big West Oil Co.

NEW JERSEY

Barber Asphalt Co., 1600 Arch St., Philadelphia, Pa.	See Illinois			
Gulf Refining Co., Frick Annex Bldg., Pittsburgh, Pa.	See Texas			
Standard Oil Co. of New Jersey, 26 Broadway, New York	W. C. Teagle	F. H. Bedford	C. T. White	S. B. Hunt
Standard Oil Co. of New Jersey, 26 Broadway, New York	See Above			
Standard Oil Co. of New Jersey, 26 Broadway, New York	See Above			
Tide Water Oil Co., 11 Broadway, New York	Axtell J. Byles	Robert McKelvy	F. J. Fallon	F. A. Marsellus
Vacuum Oil Co., 61 Broadway, New York	See New York			
Warner Quinlan Co., 26 Beaver St., New York	W. W. McFarland	[2]Frank Frankel	George Frankel	George Frankel

[1]S. B. Hunt, J. A. Moffett, Jr., vice presidents, Standard Oil Co. of New Jersey; G. H. Jones, chairman of the board.
[2]Morris Frankel, Lonis Raircz, vice presidents, Warner Tuinlan Co.
[3]President Standard Development Co. Standard Oil Co. of New Jersey.

NEW MEXICO

Continental Oil Co., Continental Bldg., Denver, Colo.	S. H. Keoughan	W. H. Ferguson	H. P. Ferree	Geo. F. Smith
Continental Oil Co., Continental Bldg., Denver, Colo.	See Above			
Gilliland Oil Co., Tuloma Bldg., Tulsa, Okla.	J. W. Gilliland	R. C. Gilliland	D. W. Johnson	D. W. Johnson
Gilliland Oil Co., Tuloma Bldg., Tulsa, Okla.		See Above		

NEW YORK

Sinclair Refining Co., 45 Nassau St., New York City	See Indiana			
Standard Oil Co. of New York, 26 Broadway, New York City	Herbert L. Pratt	[1]C. F. Meyer	Frederick S. Fales	Richard P. Tinsley
Standard Oil Co. of New York, 26 Broadway, New York City	See above			
Vacuum Oil Co., 61 Broadway, New York City	G. P. Whaley	[1]C. E. Bedford	George V. Holton	Herbert Baker

[1]H. E. Cole, C. M. Higgins, E. R. Brown, vice presidents Standard Oil Co. of New York.
[2]Chairman of Manufacturing Board, Standard Oil Co. of New York.

OHIO

Canfield Oil Co., The, 3216 E. Fifty-fifth St., Cleveland	Louis Carruth	Charles McLean	H. M. Carruth	J. A. Jackson
Craig Oil Co., The, Weaver and Gleason Sts., Toledo	Pressly T. Craig	J. F. Minke	Geo. L. Craig, Jr.	Justin H. Bender
National Refining Co., National Bldg., Cleveland	F. B. Fretter	[1]W. E. MacEwen	C. S. Smith	H. F. Heil
National Refining Co., National Bldg., Cleveland	See above			
Paragon Refining Co., The, Toledo	E. W. Edwards	H. W. Edwards	C. J. Leroux	C. J. Leroux
Pure Oil Co., Pure Oil Bldg., Chicago, Ill.	See Oklahoma			
Rajah Oil & Refining Co., Youngstown	B. F. Simms		R. C. Miller	R. C. Miller
Solar Refining Co., Lima	F. T. Cuthbert	[1]J. R. Cuthbert	H. A. Graham	E. L. Hughes
Standard Oil Co. of Ohio, East Ohio Gas Bldg., Cleveland	A. P. Coombe	[2]W. H. Foster	M. G. Vilas	M. G. Vilas
Standard Oil Co. of Ohio, East Ohio Gas Bldg., Cleveland	See above			
Stellar Refining Co., Newark	Wm. G. Leamon	J. W. Leonard	D. R. Buchanan	D. R. Buchanan
Sun Oil Co., Finance Bldg., Philadelphia, Pa.	See Pennsylvania			
Superoil Co., Seymour, Conn.	Franklin S. Jerome	E. W. Jackson	C. L. Hopkins	C. L. Hopkins

[1]E. L. Hughes, vice president in charge of sales, Solar Refining Co.
[2]B. A. Mathews, vice president Standard Oil Co. of Ohio.

OKLAHOM

Anderson-Prichard Oil Corp., Colcord Bldg., Oklahoma City	L. H. Prichard	J. Steve Anderson	P. H. Anderson	P. H. Anderson
Barnsdall Refineries, Inc., Petroleum Bldg., Tulsa	E. B. Reeser	[1]George D. Locke	James A. Dunn	H. M. Edinger
Barnsdall Refineries, Inc., Petroleum Bldg., Tulsa	See Above	See Above	See Above	See Above
Bell Oil & Gas Co., Kennedy Bldg., Tulsa	S. L. Lubell	Mark Finston		Mark Finston
Bolene Refining Co., Enid	T. T. Eason	T. L. Wade	V. E. Bolene	J. D. Montgomery
Cameron Refining Co., Ardmore	Wirt Franklin	[2]D. A. Corcoran	Edward Galt	P. C. Dings
Canfield Refining Co., Yale	G. W. Canfield	W. E. Canfield		C. G. Canfield
Champlin Refining Co., First National Bank Bldg, Enid	H. H. Champlin	R. A. Champlin	D. W. Cotton	D. W. Cotton
Continental Oil Co., Continental Bldg., Denver, Colo.	[12]S. H. Keoughan	W. H. Ferguson	H. P. Ferree	G. F. Smith
Cushing Refining & Gasoline Co., Cushing	E. C. Mullendore	E. J. Blank	Rex H. Winget	R. C. Jones

Companies and Plants Operating in the United States

LOUISIANA (continued)

General Manager	Plant Supt.	Sales Managers: Tank Car	Sales Managers: Bulk & Serv. Sta.	Name of Company	Plant Loc.	Crude Cap.	Type Plant	Crack. Cap.	Type C. Unit
				Sinclair Refining Co.	Mereaux	25,000	S&A	40,000	Burton, Tube & Tank
				Standard Oil Co. of Louisiana	Baton Rouge	80,000	Comp.		
	E. L. McLaren			Texas Company, The	Shreveport	5,800	T		

[1]Luca Vaccaro, S. D'Antoni, vice presidents, Chalmette Petroleum Corp.
[2]C. I. Fiero, vice president, Standard Oil Co. of Louisiana.
[3]P. H. Harwood, J. S. Wood, Joseph J. Cotter, R. G. Stewart, F. Ewing, vice presidents, Mexican Petroleum Co.

MARYLAND

	J. P. Connor			Interocean Oil Co.	Baltimore	7,000	S&LA	2,000	Leamon, Dubbs
	R. A. Porterfield	F. A. Niedrach	F. E. Niedrach	Prudential Oil Corp.	Baltimore	6,000	Comp.	2,000	Dubbs
				Standard Oil Co. of N. J.	Baltimore	32,000	Comp.	39,200	Burton, Tube & Tank

MASSACHUSETTS

	H. H. Hewetson	K. G. Johnston	A. M. Bruce	Beacon Oil Co.	Everett	16,000	SC&A	13,000	Tube and Tank
John S. Cordell	L. M. Bound	C. W. Lewis	T. J. Spellman	Cities Service Ref. Co.	E. Braintree	8,000	SL&W	2,500	Holmes-Manley
D. T. Schultz	L. B. Foust			New England Oil Ref. Co.	Fall River	30,000	S&A		

[1]Sam Vaughn, vice president, New England Oil Refining Co.

MISSOURI

C. H. Apple	Lindley J. Apple	Robert Arens	Harry J. Fry	Alliance Rubber Prod. Co.	Kansas City	2,000	S&A		
G. H. Moffett	H. R. Boehmer			Standard Oil Co. of Indiana	Sugar Creek	12,000	Comp.	15,000	Burton, Holmes-Manley
C. S. Banks	C. S. Banks	E. F. Painter		Wilhoit Refining Co.	Joplin	1,000	S&C	1,000	Jenkins

MONTANA

H. E. Landeen				Absher Refineries, Inc	Kevin	200	T		
	Paul Jones	C. H. Brown	C. H. Brown	Arro Oil & Refining Co.	W. Lewistown	1,500	S&C	800	Dubbs
W. S. Hawley	William Landes	W. S. Hawley	A. Soderstrom	Big West Oil Co.	Kevin	1,200	S		
	H. McCann			Hart Refineries	Missoula	300	S		
	G. A. Sarbo			Hart Refineries	Hedges	100	S		
				International Refining Co.	Sunburst	8,000	S		
A. E. O'Brien	Floyd J. Huff			Lewistown Oil & Refining Co.	Lewistown	1,800	S		
W. G. Stearns	R. W. Lind			Reliance Refining Co.	Kalispell	1,000	S		
A. B. Whitcomb	Byron D. Whitcomb	A. B. Whitcomb	Whitcomb	Round Up Oil & Refining Co.	Butte	200	S		
				Silver Bow Refining Co.	Butte	500	S		
Adam J. Eulberg	Benj. A. Eulberg			Snow Cap Oil Co.	Sunburst	250	S		
M. C. Henderson	C. E. Anderson	M. C. Henderson		Sunburst Refining Co.	Great Falls	3,000	S		
P. N. Fortin	A. A. Whittier	P. N. Fortin	P. N. Fortin	Yale Oil Corp. of S. Dak.	Miles City	800	S		

[1]C. H. Brown, vice president, Arro Oil & Refining Co.

NEW JERSEY

	J. H. Weller			Barber Asphalt Co.	Maurer	4,000	SC&A	2,000	Cross
	T. S. K. Hawxhurst			Gulf Refining Co.	Bayonne	20,000	S		
[1]Geo. W. McKnight	[2]F. H. Howard			Standard Oil Co. of N. J.	Bayonne	88,000	Comp.	18,500	Tube and Tank
				Standard Oil Co. of N. J.	Linden	75,000	Comp.	94,400	Burton, Tube & Tank
				Standard Oil Co. of N. J.	Jersey City	17,000	L		
				Tide Water Oil Co.	Bayonne	40,000	SL&C	12,000	Burton, Tube & Tank
				Vacuum Oil Co.	Paulsboro	13,000	Comp.	11,500	Tube & Tank, Cross
George Frankel	Wm. McIntyre		Bernard Frankel	Warner-Quinlan Co.	Warners	6,000	TL&C	1,500	Dubbs

[1]Chairman, manufacturing committee, Standard Oil Co. of New Jersey.
[2]Edward T. Shea, F. B. Vanderholf, vice presidents, Tide Water Oil Co.

NEW MEXICO

	H. H. Kinnaird			Continental Oil Co.	Farmington	750	S		
	E. R. Huely			Continental Oil Co.	Artesia	1,500	S		
J. W. Koontz	E. A. Wehline	J. V. Ryan	J. V. Ryan	Gilliland Oil Co.	Roswell	500	S		
	E. L. Rogers			Gilliland Oil Co.	Albuquerque	1,500	S		

NEW YORK

				Sinclair Refining Co.	Wellsville	1,000	S&L		
[1]Henry C. Smart			H. A. Wilkinson	Standard Oil Co. of New York	Brooklyn	24,000	Comp.	8,000	Burton, Cross
				Standard Oil Co. of New York	Buffalo	3,500	Wax		
				Vacuum Oil Co.	Olean	7,000	Comp.	4,000	Tube-Tank, Cross

[1]W. M. McGee and C. E. Arnott, vice presidents Vacuum Oil Co.; Edward Prizer, chairman of board.

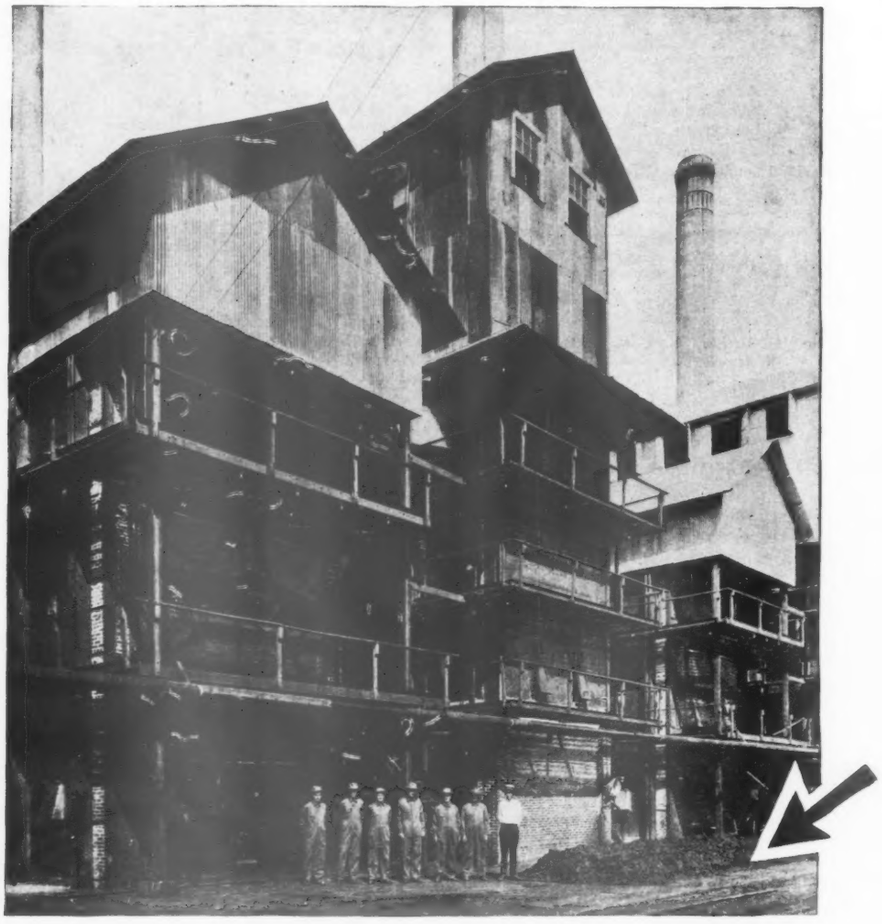
OHIO

				Canfield Oil Co., The	Cleveland	1,200	L&W		
[1]J. F. Minke		J. H. VanDershings	J. H. VanDershings	Craig Oil Co., The	Toledo	1,800	L&W		
F. B. Fretter				National Refining Co.	Findlay	1,500	Comp.	1,000	National
				National Refining Co.	Marietta	500	L&W	500	National
	C. W. Luton	John Edwards	Vern Whitney	Paragon Refining Co.	Toledo	10,000	SL&W	3,000	Dubbs
	J. F. Miller			Pure Oil Co.	Heath	5,000	S&C	6,000	Cross
J. Kuebler	J. Kuebler	B. F. Simms	Geo. Decker	Rajah Oil & Refining Co.	Youngstown	500	L		
F. T. Cuthbert	J. R. Cuthbert	E. L. Hughes		Solar Refining Co.	Lima	10,000	Comp.	6,000	Burton, Cross
	[1]C. C. Hogen	A. J. Millns	A. J. Millns	Standard Oil Co. of Ohio	Cleveland	8,000	Comp.	8,000	Burton
	G. W. Hanneken			Standard Oil Co. of Ohio	Toledo	10,000	L&W	8,000	Burton
W. V. Buchanan	D. B. Church	W. V. Buchanan	R. W. Goldsbarry	Stellar Refining Co.	Newark	1,000	S&C	500	Leamon
	H. O. Cameron			Sun Oil Co.	Toledo	5,500	Comp.		
E. W. Jackson	J. J. Cunan	R. J. Fleckenstein	R. J. Fleckenstein	Superoil Co.	Toledo	150	L		

[1]E. S. Page and W. H. Lamprecht, vice presidents National Refining Co.
[2]J. Stewart Harrison in charge of all refineries and shops.

OKLAHOMA

	P. I. Finkler	C. H. Dresser		Anderson-Prichard Oil Corp.	Cyril	1,500	S		
	E. M. Coffey	H. L. Hughes	[10]M. G. Eitleman	Barnsdall Refgs., Inc.	Barnsdall	6,000	Comp.	4,000	Cross
	G. T. Granger	See Above		Barnsdall Refgs., Inc.	Okmulgee	10,000	S&C	4,000	Cross
Mark Finston	F. C. Childs	Albert Finston		Bell Oil & Gas Co.	Grandfield	4,500	S	1,200	Dubbs
V. E. Bolene	L. C. Florence	R. H. Rowland	J. D. Montgomery	Bolene Refining Co.	Enid	5,000	S&C	2,000	Jenkins
	A. M. Edmiston	D. A. Corcoran		Cameron Refining Co.	Ardmore	4,000	S		
G. W. Canfield	C. G. Canfield	G. W. Canfield	L. A. Wilcoxen	Canfield Refining Co.	Yale	500	S		
H. H. Champlin	D. E. Slater	L. A. Snyder	A. H. Holland	Champlin Refining Co.	Enid	16,000	S&C	4,000	Cross
[11]A. D. David	M. S. Beringer	L. R. Milne	L. R. Milne	Continental Oil Co	Sapulpa	10,000	S&C	3,600	Cross
Rex H. Winget	[12]F. A. Davis	E. O. Derrick		Cushing Refg. & Gasoline Co.	Cushing	2,500	S		



Unit No. 51 of the Holmes-Manley installation at the Port Arthur Works of The Texas Company.

This unit recently established the following record for continuity of pressure stilling operation:

Started charging:	7 P. M. May 12, 1926
Fires Cut:	1 P. M. Aug. 18, 1926
Again in operation:	9 P. M. Aug. 19, 1926

98 days on steam, charging 106,459 barrels, and back in operation after 32 hours shut-down for inspection and cleaning.

The arrow indicates the small amount of coke produced during this run. It figured only 12/100 lbs. per barrel.

The Holmes-Manley *Cracking* Process

Coke formation in stills, working and storage tanks is being constantly reduced:—

1925 65/100 of 1%
1926 48/100 of 1%

The Licensee receives:—

1. *A Proven Process*
2. *Complete Technical Service*
3. *The Benefit of Future Developments*

Licenses Granted by

THE TEXAS COMPANY, U. S. A.

Apply to

W. S. S. RODGERS
17 Battery Place, New York, N. Y.

1927 Refinery Survey, Covering Personnel of Compa

OKLAHOMA

Name and General Offices—	President	Vice President	Secretary	Treasurer
Cushing Refining & Gasoline Co., Cushing	See Above	See Above	See Above	See Above
Empire Refineries, Inc., Security National Bank Bldg., Tulsa	H. L. Doherty	[2]P. M. Miskell	C. E. Murray	David Harris
Empire Refineries, Commercial Bldg., Tulsa	See Above	See Above	See Above	See Above
Empire Refineries, Commercial Bldg., Tulsa	See Above	See Above	See Above	See Above
Garber Refinery, Inc., Garber	G. J. Taft	C. A. Ring	Roy R. Ayers	Roy R. Ayers
Gilmer Oil Co., Ardmore	S. J. Hernstadt	M. Newborg	W. L. Hernstadt	W. L. Hernstadt
Globe Oil & Refining Co., Blackwell	I. O. Shaughnessy	F. L. Jehle	R. E. Everett	
Illinois Oil Co., Rock Island, Ill.	Frank P. Welch	J. W. Armstrong	F. R. Edwards	F. R. Edwards
Imperial Refining Co., Atlas Life Bldg., Tulsa	W. B. Hassett	S. H. Fredericks	D. N. Cleek	W. B. Hassett
Independent Oil & Gas Co, Kennedy Bldg., Tulsa	Ed H. Moore	Wade H. James	R. M. Riggins	R. M. Riggins
Interocean Refining Co., Mid-Continent Bldg., Tulsa	C. Wilbur Miller	[16]J. C. Kissick	Robert J. Gill	J. C. Kissick
Johnson Oil Refining Co., 208 S. LaSalle St., Chicago	Homer H. Johnson	L. Ralph Johnson	I. H. Johnson	I. H. Johnson
Marland Refining Co., Ponca City	E. W. Marland	[4]Walter Miller	C. E. Stephenson	R. E. Clark
Mid-Continent Petroleum Corp., Cosden Bldg., Tulsa	Jacob France	[5]D. W. Moffitt	E. M. Rouzer	Charles Klein
Miller Brothers 101 Ranch, Marland	W A Carson, Tr.	J. E. Carson, Tr.	Margaret Tierney	T. O. Manning
Oil State Refining Co., Allen	C. L. Richards	D. A. Dean	W. R. Major	W. R. Major
Peppers Gasoline Co., Enid	Charles C. Peppers		H. H. Champlin	
Pierce Petroleum Corp., 418 Olive St., St. Louis, Mo.	E. D. Levy		S. W. Everett	E. D. Levy
Producers Oil Co., Bristow	Partnership	Geo. W. Snedden et al		
Producers & Refiners Corp., Patterson Bldg., Denver, Colo.		[6]L. R. Crawford	A. W. Heinemann	O. O. Holmgren
Pure Oil Co, Chicago, Pure Oil Bldg.	Henry M. Dawes	[7]C. C. Burr	F. S. Heath	Rawleigh Warren
Pure Oil Co., Chicago	See Above	See Above	See Above	See Above
Riley Petroleum Co., Kennedy Bldg., Tulsa	Partnership, L. J. Riley and Harry Bell			
Rock Island Refining Co., Duncan	C. H. Verschoyle	L. B. Simmons	F. G. Hull	F. G. Hull
Shaffer Oil & Refining Co., 424 S. Cheyenne St., Tulsa	John J. O'Brien	[8]John L. Gray	W. R. Francisco	W. R. Francisco
Sun Oil Co., 1428 S. Penn Square, Philadelphia, Pa.	See Sun Oil Co., Pennsylvania			
Sinclair Refining Co., 45 Nassau St., New York	See Indiana			
Texas Pacific Coal & Oil Co., F. & M. Bank Bldg., Fort Worth, Tex.	E. T. Marston	E. R. Lederer	H. W. Knox	E. T. Marston
The Texas Company, Houston, Tex.	See Texas			
Tidal Refining Co., Tidal Bldg., Tulsa	J. N. Robinson	[30]Lloyd F. Bayer	D. W. Bell	D. W. Bell
Transcontinental Oil Co., Ritz Bldg., Tulsa	F. B. Parriott	[9]J. C. Adams	E. D. Robinson	E. D. Robinson
Transcontinental Oil Co., Ritz Bldg, Tulsa	See Above			
Tonkawa Petroleum Co., Tonkawa	Jules Constantin	M. Constantin	O. Boure	O. Boure
Western Oil Corp., Mid-Continent Bldg., Tulsa	Walter K. Campbell	Geo. W. Snedden	J. F. Darby	J. F. Darby
Yale Oil Corp., Yale	L. B. Hancock	C. H. Gifford	F. B. Hancock	F. B. Hancock

[1]F. E. Holsten, vice president Barndall Refineries, Inc.
[2]Ossian Cameron, Roy M. Johnson, vice presidents Cameron Refining Co.
[3]H. R. Straight, vice president Empire Refineries, Inc.
[4]H. C. Mulroy, S. C. Collins, G. C. Shallenburger, vice presidents Marland Refining Co.
[5]J. C. Denton, G. O. Moody, vice presidents Mid-Continent Petroleum Corp.
[6]John Fertig, R. E. Wertz, vice presidents Producers & Refiners Corp.
[7]W. E. Hutton, N. H. Weber, H. N. Cole, R. W. McIlvain, F. S. Heath, C. B. Watson, Vice Presidents of Pure Oil Co.
[8]L. B. Riddle, vice president Shaffer Oil & Refining Co.
[9]John M. Holliday, L. B. McCammon, M. W. Bottomfield, vice presidents Transcontinental Oil Co.

PENNSYLVANI

American Oil Works Co., Titusville	John A. Beck	Wayne K. Glenn	A. B. Weingard	
Atlantic Refining Co., 260 South Broad Street, Philadelphia	J. W. Van Dyke	[1]W. M. Irish	W. M. O'Connor	Albert Hill
Atlantic Refining Co., 260 South Broad Street, Philadelphia	See above			
Atlantic Refining Co., 260 South Broad Street, Philadelphia	See above			
Bradford Oil Refining Co., Bradford	J. H. Rose	F. D. Korner	T. E. Mallory	T. E. Mallory
Butler County Oil Refining Co., Butler	Lewis P. Litzinger	P. F. Conerty	C. R. Halleran	E. M. Litzinger
Canfield Oil Co., The, 3216 East Fifty-fifth Street, Cleveland, Ohio	See Ohio			
Carnegie Refining Co., Carnegie	H. A. Logan	[2]F. G. Bannerot	W. C. Heasley	F. G. Bannerot
Conewango Refining Co., Warren	Fred G. Clark	Harry R. Lewis	Floyd D. Davis	Harry R. Lewis
Continental Refining Co., Oil City	A. F. Anderton	S. S. De Arman	J. W. Anderton	T. A. Anderton
Crew-Levick Co., 219 North Broad Street, Philadelphia	Henry L. Doherty	[3]Chas. E. Foster	Chas. E. Foster	E. J. Hasse
Crew-Levick Co., 219 North Broad Street, Philadelphia	See above			
Crystal Oil Works, Oil City	J. A. Fawcett and E. V. Selden, proprietors			
Daugherty, W. H., & Son Refining Co., 114 Fifth Avenue, New York, N. Y.	Dr. F. Sonneborn	S. B. Sonneborn	R. G. Sonneborn	M. Pick
Emery Manufacturing Co., Bradford	E. C. Emery	Lewis Emery	W. A. McCafferty	Lewis Emery
Emlenton Refining Co., Emlenton	R. J. Bayer	H. J. Crawford	T. B. Gregory	S. Messer
Empire Oil Works, Inc., Oil City	A. L. Confer	[4]Frederick Fair	A. W. Scott	A. W. Scott
Freedom Oil Works Co., The, Third Street, Freedom	Percy L. Craig	[5]A. J. Minke	C. E. McKee	C. E. McKee
Freedom Oil Works Co., The, Third Street, Freedom	See above			
Gulf Refining Co., Frick Annex Building, Pittsburgh	See Texas			
Independent Refining Co., Oil City	S. Messer	H. J. Crawford	P. S. Tarbox	E. P. Theobold
Island Petroleum Co., Bessemer Building, Pittsburgh	Wm. H. Fehsenfeld	V. B. Ward	L. K. High	L. K. High
Kendall Refining Co., Bradford	Otto Koch	[6]Jos. H. Bovaird	Howard H. Greene	Irvine H. Shearer
McKean County Refining Co., Kennedy Street, Bradford	F. F. Moore	C. S. Knabb	B. B. Stroud	B. B. Stroud
Miller, A. D., Sons Co., Columbus and Preble Avenue, Pittsburgh	R. B. Miller	J. B. Miller	Jas. R. Miller	A. D. Miller
Mutual Refining Co., Warren	W. F. Bennett	Fred C. Eaton	A. W. Eaton	Herbert G. Eaton
North Penn Refining Co., Tiona	Sterns Marshall and H. M. Wick of Bradford, receivers.			
Oil Creek Refining Co., Titusville	D. W. McGraw, Sr.	J. E. Fleming	M. D. Woods	G. F. Fleming
Pennsylvania Oil Products Co., Warren	M. F. Cowden	Geo. E. Muir	H. E. Lawrence	D. F. Cowden
Pennsylvania Refining Co., Karns City	John A. Beck	Wayne K. Glenn	Paul R. Beck	Paul R. Beck
Pennzoil Co., The, Rouseville	C. L. Suhr	[7]Louis Walz	D. J. Cavanaugh	M. A. Brewster
Pure Oil Co., Pure Oil Building, Chicago	See Oklahoma			
Seneca Oil Works, Warren	Geo. P. Brockway		E. W. Parshall	E. C. Gardner
Sinclair Refining Co., 45 Nassau Street, New York	See Indiana			
Smith, Levi, Refining Co., Clarendon	E. H. Beshlin	H. G. Eaton	C. D. Blair	H. F. Heilman
Starlight Refining Co., Karns City	W. J. Anderson	C. E. Pickard	W. J. Anderson	C. E. Pickard
Sun Oil Co. of New Jersey, Finance Building, Philadelphia	J. Howard Pew	[8]J. N. Pew	Frank Cross	Frank Cross
Superior Oil Works, Warren	Frank Morrison	Fred C. Eaton	Fred B. Jackson	Herbert G. Eaton
Texas Company, The, Houston, Tex.	See Texas			
Tidioute Refining Co., Tidioute	A. V. Clinger	T. C. Hawkey	F. E. Kapp	Charles E. Carnahan
Tiona Refining Co., Widener Building, Philadelphia	E. M. Lyons	C. A. Boler	Wm. A. Powell	Wm. A. Powell
Titusville Oil Works, Titusville, Pa.	F. von Tacky	F. B. von Tacky	C. L. von Tacky	E. F. von Tacky
United Refining Co., Warren	F. G. Bannerot	H. A. Logan	H. W. Schmidt	H. A. Logan
Viking Oil Corp., Clarendon	F. J. McCoy	L. C. Jamieson	R. W. Clark	F. J. McCoy
Valvoline Oil Co., 165 Broadway, New York	W. Dixon Ellis	[12]Henry W. Nichols	C. C. Gould	C. C. Gould
Valvoline Oil Co., 165 Broadway, New York	See above			
Warr-Penn Refining Co., Warren	S. D. Tibbits	E. W. Campbell	A. H. Wickstrom	R. G. Williamson
Waverly Oil Works, Fifty-fourth Street and A. V. R. R., Pittsburgh	Thos. J. Hilliard	[13]D. W. Hovey	C. D. Armstrong	H. R. Hilliard
Waverly Oil Works, Fifty-fourth Street and A. V. R. R., Pittsburgh	See above			

[1]W. P. Cutler, R. D. Leonard, W. D. Anderson, vice presidents, Atlantic Refining Co.
[2]George L. Craft, vice president, Carnegie Refining Co.
[3]R. M. Shanklin, A. M. McBurney, vice presidents, Crew-Levick Co.
[4]E. W. Chase, vice president, Empire Oil Works.
[5]Earle M. Craig, vice president, Freedom Oil Works.
[6]Howard H. Greene, vice president, Kendall Refining Co.

(Continued on Page 118)

Companies and Plants Operating in the United States

(Continued)

General Manager	Plant Supt.	Sales Managers: Tank Car	Sales Managers: Bulk & Serv. Sta.	Name of Company	Plant Loc.	Crude Cap.	Type Plant	Crack. Cap.	Type C. Unit
See Above	F. C. Hutchinson			Cushing Refg. & Gasoline Co.	Blackwell	1,500	S		
P. M. Miskell	[23]D. V.Eells	O. J. Tuttle	W. H. Merritt	Empire Refineries, Inc.	Okmulgee	3,000	SL&C	1,000	Doherty
See Above	R. R. Mills	See Above	See Above	Empire Refineries, Inc.	Ponca City	7,500	SL&C	5,500	Doherty, Dubbs
See Above	C. O. Bailey	See Above	See Above	Empire Refineries, Inc.	Cushing	7,000	S&C	1,500	Doherty
Roy R. Ayers	H. L. Welton	[24]Omar Refg. Co.		Garber Refinery, Inc.	Garber	3,500	S&C	1,000	Jenkins
S. J. Hernstadt	G. A. Sonricker	E. L. Clayton		Gilmer Oil & Refg. Co.	Ringling	1,500	S		
		E. A. Landsittle		Globe Oil & Refg. Co.	Blackwell	2,500	S&C	750	Cross
Frank P. Welch	W. W. Kelly	John Ready	Frank Edwards	Illinois Oil Co.	Cushing	3,000	S		
W. R. Hassett	J. F. Reardon	R. M. Moore		Imperial Refg. Co.	Ardmore	5,000	S&C	2,000	Dubbs
R. M. Riggins	J. W. King			Independent Oil & Gas	Okmulgee	4,000	S&C	1,000	Jenkins
	R. L. Walde	I. H. Patton, Jr.		Interocean Refg. Co.	Bristow	4,000	S		
Ralph Johnson	W. L. Leenhauts	G. B. Williams	G. B. Williams	Johnson Oil Refg. Co.	Cleveland	5,000	S&C	4,000	Dubbs
W. J. Allinson	Wayne P. Rice	F. D. Applegate	W. I. Nunn	Marland Refg. Co.	Ponca City	28,000	Comp.	17,000	Fleming, Cross, Dubbs
Jacob France	F. B. Koontz	John Carson	T. M. Martin	Mid-Continent Pet. Corp.	Tulsa	40,000	Comp.	12,000	Mid-Continent
George L. Miller	George W. Miller		J. B. Carson	Miller Bros. 101 Ranch	101 Ranch	100	S		
D. A. Dean	R. L. Johnson	D. A. Dean		Oil State Refg. Co.	Allen	800	S		
	O. C. Sullivan			Peppers Gasoline Co.	Covington	1,000	S		
T. N. Asbury	C. R. McKay	J. R. Arrington	T. N. Asbury	Pierce Petroleum Corp.	Sand Springs	12,000	SL&C	4,000	Cross
				Producers Oil Co.	Bristow	2,500	S		
John Fertig	[27]John Cutter	H. E. Johnston		Producers & Refiners Corp.	Tulsa	6,000	S&C	3,000	Dubbs
	G. A. McBride	[28]C. W. Feldmeier	L. S. Wescoat	Pure Oil Co.	Muskogee	5,000	SL&C	4,000	Cross
	John Jeffrey	See Above	See Above	Pure Oil Co.	Ardmore	5,000	S&C	2,000	Dubbs
				Riley Petroleum Co.	Bristow	1,000	S		
L. B. Simmons	S. E. Davis	C. C. Calvert	C. C. Calvert	Rock Island Refg. Co.	Beckett	2,500	S		
John L. Gray	W. E. Moody	B. L. Majewski	B. L. Majewski	Shaffer Oil & Refg. Co.	Cushing	10,000	SL&C	3,500	Dubbs
	C. B. Carter			Sun Oil Co.	Yale	3,000	S		
				Sinclair Refining Co.	Muskogee	1,000	S		
	T. A. Pomeroy	F. D. Boslaph	C. A. Taylor	Texas Pacific Coal & Oil Co.	Wynnewood	2,500	S&C	1,000	Dubbs
	P. L. Drake			The Texas Company	Tulsa	10,000	Comp.	13,600	Holmes-Manley
Lloyd F. Bayer	R. S. Stanfield	A. F. Garrett		Tidal Refining Co.	Drumright	10,000	S&C	1,300	Burton
A. J. Slagter	William M. Fraser	H. J. Scott	H. J. Scott	Transcontinental Oil Co.	Bristow	5,000	S&C	1,350	Slagter
	J. R. Barrett			Transcontinental Oil Co.	Boynton	2,500	Comp.	600	Slagter
E. Constantin	Ed Toups	E. Constantin		Tonkawa Petroleum Co.	Tonkawa	2,500	S		
I. H. Patton, Jr.	J. R. Travis	I. H. Patton, Jr.		Western Oil Corp.	Beckett	2,000	S		
F. B. Hancock	Willard Shaw	F. B. Hancock		Yale Oil Corp.	Yale	1,500	S		

[23]Vice president Barnsdall Refining Co., Elmhurst Bldg., Kansas City, Mo.
[24]General Manager of Refineries, Continental Oil Co.
[25]E. L. Wilson, Chairman of Board, Continental Oil Co.
[26]J. H. Hutchinson, General Superintendent, Cushing Refining & Gasoline Co.
[27]Omar Refining Co., Roberts Bldg., Tulsa.
[28]Assistant Manufacturing Manager, Marland Refining Co.
[29]George N. Snedden and A. W. Gieske, vice presidents Interocean Oil Co.
[30]J. A. Sartori, General Superintendent of all P. & R. Refineries.
[31]H. W. Camp, General Superintendent of Refineries, Empire Refineries, Inc.
[32]R. H. McElroy, also General Manager Pure Oil Co.
[33]A. F. Garrett and W. C. Franklin, vice presidents Tidal Refining Co.
[34]General Superintendent of Refineries, Transcontinental Oil Co.

PENNSYLVANIA

A. B. Weingard				American Oil Works	Titusville	500	SL&C	200	Fleming
T. G. Ritbridge				Atlantic Ref. Co.	Philadelphia	50,000	Comp.	20,000	Lewis, Cross
				Atlantic Ref. Co.	Franklin	7,000	Comp.	6,000	Lewis, Cross
	W. R. Reck	James Lewis		Atlantic Ref. Co.	Pittsburgh	7,000	Comp.	5,250	Lewis, Cross
				Bradford Oil Ref. Co.	Bradford	1,000	L		
P. F. Conerty	C. J. McCorry	P. F. Conerty	Lewis P. Litzinger	Butler County Oil Ref. Co.	Bruin	1,000	Comp.	400	Bruin
				Canfield Oil Co.	Coraopolis	1,000	L		
	Robert Burr	J. Earl French		Carnegie Ref. Co.	Carnegie	1,000	L		
Harry R. Lewis	Henry A. Johnson	Harry R. Lewis		Conewango Ref. Co.	Warren	1,000	L		
A. F. Anderton	T. A. Anderton	A. F. Anderton	A. F. Anderton	Continental Ref. Co.	Oil City	1,000	L&W		
Chas. E. Foster	J. W. Griswold	A. H. Irelan	W. J. O'Malley	Crew-Levick Co.	Petty Island	3,000	S&C	3,000	East'n Oil Processing
	C. E. Kinder			Crew-Levick Co.	Titusville	2,000	Comp.		
				Crystal Oil Works	Rouseville	1,000	L		
T. M. Murphy	C. E. McGinnis	T. M. Murphy		Daugherty, W. H., & Son Ref. Co.	Petrolia	600	S&L		
Lewis Emery	A. Lachman	W. A. McCafferty	W. A. McCafferty	Emery Mfg. Co.	Bradford	2,000	Comp.		
G. B. Hunter	W. J. Flynn			Emlenton Ref. Co.	Emlenton	1,000	Comp.	250	Snodgrass
E. W. Chase	C. W. Cole			Empire Oil Works, Inc.	Oil City	1,000	Comp.		
E. J. Bischoffberger		R. B. McKee	O. W. Panner	Freedom Oil Works Co.	Freedom	1,500	L&W	300	Freedom
				Freedom Oil Works Co.	Coraopolis	600	L&W	500	Dubbs
	L. R. Jones			Gulf Refining Co.	Girard Point	20,000	S		
P. S. Tarbox	H. E. Shoemaker	P. S. Tarbox		Independent Ref. Co.	Oil City	1,400	SL&C	385	Snodgrass
Myron Evans	Walter G. Eaton	Myron Evans		Island Petroleum Co.	Neville Island	1,000	SL&C	250	Snodgrass
Otto Koch	[35]Lon Crawford	Irvine H. Shearer	J. Bertram Fischer	Kendall Ref. Co.	Bradford	1,400	LW&C	1,000	Dubbs
		B. B. Stroud		McKean County Ref. Co.	Farmers Valley	1,000	SL&C		
J. B. Miller	Wm. Clowes	O. B. Opsion	O. B. Opsion	Miller, A. D., Sons Co.	Pittsburgh	1,000	L&W		
Herbert G. Eaton	A. T. Eaton	Herbert G. Eaton	Herbert G. Eaton	Mutual Ref. Co.	Warren	500	L&C	200	Snodgrass-Conerty
				North Penn Ref. Co.	Tiona	500	S&L		
J. E. Fleming	F. J. McGraw	M. D. Woods		Oil Creek Ref. Co.	Titusville	1,000	SL&W		
M. F. Cowden	S. Stannard	H. S. Hayden	H. S. Hayden	Pennsylvania Oil Products Co.	Eldred	1,500	L		
	W. W. Beck			Pennsylvania Ref. Co.	Karns City	700	L&W		
C. L. Suhr	L. D. Fulton	D. J. Cavanaugh	J. J. Fox	Pennzoil Co., The	Rouseville	3,500	L&W	3,000	Fleming, Dubbs
	E. A. McCadden			Pure Oil Co., The	Marcus Hook	10,000	SL&W	8,000	Cross
Geo. P. Brockway	Harry S. Peterson			Seneca Oil Works	Warren	560	L&C	200	Snodgrass
				Sinclair Ref. Co.	Marcus Hook	12,500	C	20,000	Isom
H. F. Heilman	W. J. Colvin			Smith Levi Ref. Co.	Clarendon	350	S		
W. J. Anderson	C. E. Pickard	W. J. Henderson	W. J. Henderson	Starlight Ref. Co.	Karns City	200	Wax		
	W. D. Mason	S. B. Eckhert	S. B. Eckhert	Sun Oil Co. of N. J.	Marcus Hook	20,000	Comp.	10,000	Cross
Herbert G. Eaton	H. F. Cogswell	Herbert G. Eaton	Herbert G. Eaton	Sunperior Oil Works	Warren	400	L		
	J. R. Alexander			Texas Company, The	Marcus Hook	2,500	A		
T. C. Hawkey	H. E. Millard	T. C. Hawkey	T. C. Hawkey	Tidioute Ref. Co.	Tidioute	800	S		
E. M. Lyons	H. W. Walchli	E. M. Lyons		Tiona Ref. Co.	Clarendon	1,000	SL&W		
F. B. von Tacky		F. B. von Tacky		Titusville Oil Works	Titusville	1,000	L	200	Fleming
H. A. Logan				United Ref. Co.	Warren	1,500	L		
L. C. Jamieson	George Seager			Viking Oil Corp.	Clarendon	1,000	L&W		
W. Dixon Ellis	Fred C. Eaton		Walter L. Day	Valvoline Oil Co.	Noeline	2,000	L&W		
				Valvoline Oil Co.	Warren	1,000	L&W		
S. D. Tibbits	G. R. Williamson	Wm. Schwartz	Wm. Schwartz	Warr-Penn Ref. Co.	Warren	400	L		
D. W. Hovey	James T. Malone	L. L. Long	R. W. Sill	Waverly Oil Works Co.	Pittsburgh	1,000	LW&C	1,000	Cross
	H. A. Trimmer			Waverly Oil Works Co.	Coraopolis	3,000	S		

[35]E. C. Breene, vice president, The Pennzoil Co.
[36]J. Edgar Pew, John G. Pew, Francis S. McIlhenny, vice presidents, Sun Oil Co. of New Jersey.
[37]Head of development department, Atlantic Refining Co.
[38]J. A. Schaffner, vice president, McKean County Refining Co.
[39]H. R. Hilliard, vice president, Waverly Oil Works Co.
[40]Samuel Hadfield.
[41]Superintendent lubricating plant; Francis Healy, superintendent cracking plant.

(Continued on Page 119)

Recovering Sludge Acid at Refineries

Satisfactory Results Obtained Where Proper Equipment Is Installed and Care Is Taken in Operating Plant

By Otto Mantius
Consulting Engineer, United Lead Co.

Large quantities of sulphuric acid of various densities are used in oil refineries for the treatment of light oils, cracked distillates and lubricating oils. The sludge acid drawn from the bottom of the agitator consists of oil, tar, asphalt, resinous products, naphthenic and sulphonic acids, free sulphuric acid and water. Light oil sludge will contain from 30 to 40 per cent of oil and has from 45 to 55 per cent acidity. Lube oil sludges contain only from 25 to 30 per cent of oil and have an acidity of from 25 to 40 per cent.

This sludge has a considerable value as from 100 barrels we can recover about 45 bbls. of oil and 12 tons of acid. Allowing a value of $1 per barrel of oil and about $16 per ton of acid, the total value of 100 bbls. of sludge is approximately $245. The cost of recovery will be from $150 to $180, leaving a profit of from $70 to $100 so that the first cost of the installation can be paid for from the operating profits in from 15 months to 2 years.

Disposal of Sludge

A large number of small refineries dispose of the sludge by either running it into sewers after it has been diluted and partly neutralized with the waste water, or by discharging it into a sludge pond. Other refineries burn the sludge under stills or boilers after it has been mixed with an equal volume of gas oil or fuel oil. This method has been quite successful in cases where no light oil sludge was available and the bright stock sludge had to be disposed of by some means. Also the sludge is fluxed with alkali in order to form an emulsion, the waste water is settled out and the rest is burned with and without admixture of fuel oil.

In some plants the sludge is treated in separators, the oil and tar is recovered and burned, and the weak acid is discharged into the sewer. This is of course extremely wasteful as the acid forms the most valuable part of the sludge.

In all modern refineries and especially the larger ones, the sludge is recovered in restoring plants, the oil and tar is burned, and the weak acid is concentrated and used again for separation.

There is no difficulty in recovering the various products from light oil sludge as it always remains liquid and can be handled quite easily. However, heavy oil sludge frequently offers great difficulties as it contains considerable quantities of tar and hard coke and very little acid. It solidifies quickly when exposed to the air and in most cases cannot be recovered at all unless it is mixed in proper quantities with light oil sludge.

Process Of Separation

The sludge coming from the agitators is discharged into suitable vessels which have been filled previously with an equal amount of warm water. The mixture is agitated with steam and air and cooked until the decomposition of the sulphonic acids is complete, that is until no more fumes are given off. Wherever possible, heavy oil sludge should be mixed with light oil sludge and in cases where no light oil sludge is available, the mixture of sludge and water should be diluted with from 25 to 50 per cent of gas oil in order to make the tar and asphaltic products soluble.

After the cooking is completed, the mixture is allowed to settle so that the oil will come to the top and the weak acid to the bottom. There is usually also a third layer, called "acid cake", floating below the oil on top of the acid. Special precautions must be taken to prevent polymerization of the mixture as it will cause loss of oil and acid. Light oil sludge requires cooking from two to three hours, and heavy oil sludge from three to five hours, and sometimes much longer.

The separation of sludges derived from paraffin base oil usually does not offer much difficulty and the resultant weak acid contains very little carbon and can be concentrated without further treatment. However, sludge derived from asphalt base oils and especially those coming from the California, Mexican and South American fields contain a series of sulphonic and naphthenic acids which will not break up at the temperatures in the ordinary separators. Therefore, some of the refineries are using high pressure autoclays for the separation of the sludge and of course in such cases, cost of separation mounts very rapidly, due to the high cost of operation and maintenance.

Large quantities of SO_3 fumes are given off during the separation and special precautions must be taken in all cases where the separating plant is located inside a populated area. Some refineries have installed high stacks to which the hoods of the separators are connected, and others absorb the fumes in specially designed absorption systems where the fumes are neutralized by alkaline waters.

After the separation and decantation is completed, the weak acid is drawn into the rundown tank and after settling and skimming discharge into weak acid storage tanks. The oil and acid cake is discharged into fluxing or neutralizing tanks, washed with water or alkaline solution, and then pumped into the central fuel system.

The efficiency of the separating process depends entirely on the sludge handled. Some of the acid charged to the agitator remains in the oil and this accounts for from one-half to one per cent of the acid loss. A considerable quantity of the acid is taken up by the unsaturated and aromatic compounds, and the losses in H_2SO_4 will vary from 15 to 20 per cent for light oil sludge and from 25 to 40 per cent with heavy oil sludge. Compared with these figures, the actual loss of H_2SO_4 during the concentration of the acid is small, as with a well designed concentrator from 98 to 99 per cent of the acid should be recovered when concentrating to 60 degrees Baume and from 92 to 95 per cent when making 66 degree acid. This, of course, only refers to the loss of H_2SO_4 as the concentrator should not be charged with the loss due to the breaking up of the sulphonic acids during concentration.

Apparatus For Separation

The process of separating the sludge is carried out in open tanks which are lead lined and have either a slanting or conical bottom. Steam and air are admitted through open coils made of lead or brass. The capacity of the tank should allow ample room for the boiling and spattering of the acid during the cooking period. The size of the separator will depend on the quantity of the sludge discharged from the agitator and the time required for cooking and settling, which again is controlled by the nature of the sludge. The rundown tank for the acid should take care of at least one batch coming from the separators and there should be at least three tanks for the storage of weak acid, each holding one day's supply.

The oil or fluxing tank should take care of twice the volume of the oil and acid cake coming from the agitator so that there is plenty of room for the alkaline solution or the fuel oil to be mixed. Pumps should of course be made of acid-proof bronze, the pipes, valves, etc., for oil, of brass, and the pipe lines, valves and fittings for acid of lead or bronze.

All storage tanks should be lead-lined and it is advisable to cover the bottoms with acid-proof bricks so as not to injure the lead when the tanks are cleaned. Acid storage tanks should have closed steam coils to keep the acid hot as the oil and tar will come to the top very much quicker when the acid is kept warm.

Apparatus for Concentration

The weak acid coming from the separators usually has a density of from 28 to 32 degrees Baume. It should be free from suspended carbon, oil and tar, but it usually contains small quantities of sulphonic acids which break up during concentration and cause foaming and entrainment losses if present in too large quantities.

Concentration of sulphuric acid presents certain difficulties due to the corrosive action of the acid at higher temperatures and the increased boiling point of highly concentrated acid. Formerly the acid was usually concentrated in open lead pans which were set on cast iron plates or fire brick arches. The pans were heated from the bottom by fire gases and the acid so concentrated to about 60 degrees Baume. This partially concentrated acid was transferred to cast iron or high silicon iron stills also heated by fire gases and covered with lead tops cooled by water in order to recover as much as possible the overdistilled acid. Some plants used the so-called "Cascade System" for the concentration of the 60 degree acid which consists of a series of shallow vessels made of high silicon iron and arranged so that the acid will flow by gravity from one vessel to the other and leave the last vessel at the desired concentration.

Another type of concentrator utilizes the heat of the fire gases direct by blowing these gases mixed with air through the acid and in counter-current to a stream of warm acid trickling down a tower made of acid proof brick. A third system which has been installed in many refineries during the last five years consists of concentrating the acid under vacuum and using steam for the first step up to 61 degrees Baume and hot oil for the final concentration to 66 degrees Baume.

The old pan and bench system described previously is very wasteful in fuel, and the efficiency due to the losses of acid is very low. Maintenance cost is excessive and with exception of one large refinery, this system has been entirely abandoned.

The tower concentrations are low in

(Continued on Page 232)

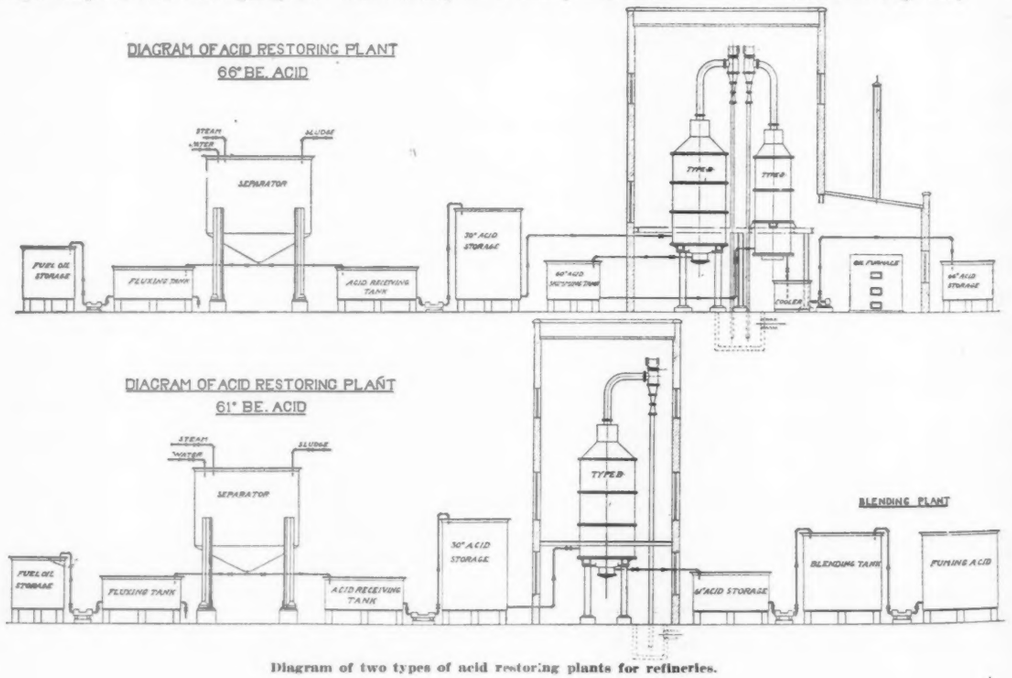


Diagram of two types of acid restoring plants for refineries.

CREAM OF THE CRUDE

...in the Spotlight

Since their introduction INDEPENDENT BRIGHT STOCKS, with their unusual specifications, have held the spotlight of popularity with the jobbers.

Ask for samples and quotations.

SPECIFICATIONS STANDARD "D"	
Gravity	23-25
Flash	530-540
Fire	600-610
Cold	15-20
Viscosity @ 210	150-160
Carbon Residue	below 2%
Emulsion	O.K.
Color (In solution)	4-4½

INDEPENDENT OIL AND GAS COMPANY
PRODUCERS AND REFINERS
KENNEDY BUILDING
TULSA OKLA.

1927 Refinery Survey, Covering Personnel of Compa

Name and General Offices—	President	Vice President	Secretary	Treasurer
RHODE ISLAND				
Standard Oil Co. of New York, 26 Broadway, New York City	See New York			
Texas Company, The, Houston, Texas	See Texas			
SOUTH CAROLINA				
Standard Oil Co. of New Jersey, 26 Broadway, New York	See New Jersey			
TEXAS				
Alamo Refining Co., Amarillo	R. B. Pringle	M. P. Youker	O. L. Cordell	O. L. Cordell
Amarillo Producers & Refiners Corp., Amarillo	J. D. Wrather		W. S. Roberts	John Wrather
Amarillo Refining Co., Inc., Amarillo	Reece S. Allen	C. J. Ferguson	Gordon T. West	Gordon T. West
American Refining Co., Inc., City Nat. Bank Bldg., Wichita Falls	W. M. Priddy	[1]H. A. Allen	H. H. Wade	H. H. Wade
Col-Tex Refining Co., Colcord Bldg., Oklahoma City, Okla.	L. H. Prichard	J. Steve Anderson	P. H. Anderson	P. H. Anderson
Continental Oil Co., Continental Bldg., Denver, Colo.	See Oklahoma			
Crown Central Petroleum Corp., Post Dispatch Bldg., Houston	W. A. Williams	M. C. Ehlen	R. H. Lindsey	N. N. Oille
Dale Oil & Refining Co., The, City Nat. Bank Bldg., Wichita Falls	J. E. Dale	[2]D. G. Gray	C. H. Melton	C. H. Melton
Deepwater Oil Refineries Co., First Nat. Bank Bldg., Houston	E. A. Fouts	[3]F. M. Law	E. L. Neville	
Empire Refineries, Inc., Commercial Bldg., Tulsa, Okla.	See Oklahoma			
Falls Refining Co., Wichita Falls	H. W. Roberts	Owner		
Freeport Asphalt Co., Freeport	C. A. Jones	R. W. Stone	P. G. Maercky	P. G. Maercky
Galena-Signal Oil Co. of Texas, Houston	W. N. Long	[4]R. J. Clark	Carl Illig	A. D. Moran
Grayburg Oil Co., San Antonio	F. L. Thomson	[5]J. S. Young	E. Palmer	E. Palmer
Gulf Refining Co., Frick Annex Bldg., Pittsburgh, Pa.	George S. Davison	[6]G. R. Nutty	W. J. Guthrie	J. E. Nelson
Gulf Refining Co., Frick Annex Bldg., Pittsburgh, Pa	See above			
Hagaman Refining Corp., Ranger	M. H. Hagaman		G. H. Clements	Leslie H. Hagaman
Humble Oil & Refining Co., Humble Bldg., Houston	W. S. Farish	[7]R. L. Blaffer	F. O. Freese	R. L. Blaffer
Humble Oil & Refining Co., Houston	See above			
Iowa Park Producing & Refining Co., Iowa Park	J. F. Boyd	P. F. Gwynn	J. D. Overbey	Tom Corridon
Keen & Woolf Co., Keystone Bldg., Houston	W. C. Woolf	C. D. Keen	S. F. Stroud	
Kent-Middleton Refining Co., Corsicana	Partnership			
Kent-Middleton Refining Co., Corsicana	See above			
MacMillan Refining Co., Ruel Bldg., Amarillo	R. S. MacMillan	H. R. MacMillan	S. N. Batterson	Dewitt Knox
Magnolia Petroleum Co., Magnolia Bldg., Dallas	E. R. Brown	[8]E. E. Plumly	Courtenay Marshall	W. C. Proctor
Magnolia Petroleum Co., Magnolia Bldg., Dallas	See above			
Magnolia Petroleum Co., Magnolia Bldg., Dallas	See above			
Magnolia Petroleum Co., Magnolia Bldg., Dallas	See above			
Magnolia Petroleum Co., Magnolia Bldg., Dallas	See above			
Megargel Oil & Refining Co., Wichita Falls	E. Constantin, Jr.		F. W. Fischer	F. W. Fischer
Misko Refineries, Inc., Laredo	O. W. Killam	W. T. Killam	J. O. Garnel	W. F. Killam
Noble Oil & Gas Co., Wright Bldg., Tulsa, Okla.	T. B. Preston	W. C. Abrams	Geo. H. Kirschner	W. C. Abrams
Olney Oil & Refining Co., Olney	O. T. Olney and S. J. Marcell, partners.			
Orient Petroleum Co., Wichita Falls, Tex.	H. C. Meier	W. F. Davis	E. G. Guy	J. P. Howe
Oriental Oil Co., Wilson Bldg., Dallas	W. R. Smith	F. M. Smith	L. Towns	F. M. Smith
Panhandle Refining Co., Staley Bldg., Wichita Falls	Roy B. Jones	Thomas Morrissey	R. C. Stanford	M. A. Chambers
Pioneer Oil & Refining Co., San Antonio	A. B. Slimp	Hy C. King, Jr.	M. L. Roach	M. L. Roach
Primrose Petroleum Co., Inc., Wichita Falls	E. Garonzik	[9]S. E. Brin	H. D. Brin	H. D. Brin
Primtex Refining Co., Dallas	Herbert D. Brin	S. E. Brin	E. Garonzik	E. Garonzik
Pure Oil Co., The	See Oklahoma			
Simms Oil Co., Magnolia Bldg., Dallas	Edward T. Moore	[10]Frank R. Schneider	L. W. Richards	D. H. Voss
Terminal Oil & Refining Co., Houston	E. G. Goforth	Mills Bennett	L. D. Minto	L. D. Minto
Texas Company, The, Houston	R. C. Holmes	[11]T. J. Donoghue	E. M. Crone	C. E. Woodbridge
Texas Company, The, Houston	See above			
Texas Company, The, Houston	See above			
Texas Pacific Coal & Oil Co., F. & M. Bank Bldg., Fort Worth	R. T. Penn	E. T. Marston	H. W. Knox	E. T. Marston
Tidal Western Refining Co., Tidal Bldg., Tulsa, Okla.	J. N. Robinson	L. F. Bayer	D. W. Bell	D. W. Bell
Transcontinental Oil Co., Ritz Bldg., Tulsa, Okla.	See Oklahoma			
Waggoner Refining Co., Electra	W. T. Waggoner		R. L. Moore	R. L. Moore
Western Oil Corp., Wichita Falls (leased by Anderson-Prichard Oil Corp.)	See Anderson-Prichard, Oklahoma			
White Eagle Oil & Refining Co., Federal Reserve Bldg., Kansas City, Mo.	See Kansas			
Witherspoon Oil Co., San Antonio	C. L. Witherspoon			
Yuba Oil Refining Co., Nacogdoches	Mrs. P. M. Rideout	Thos. E. Baker	J. B. Burk	J. B. Burk
UTAH				
Diamond Oil Co., Salt Lake City	John T. White	J. W. Musser	Joseph Behling	Joseph Behling
Utah Oil Refining Co., Salt Lake City	John C. Howard	Wm. R. Wallace	A. N. Johnson	A. N. Johnson
VIRGINIA				
Texas Company, The, Houston, Tex.	See Texas			
WASHINGTON				
Spokane Oil & Refining Co., Spokane	R. K. Neill	S. E. Smith	A. W. Witherspoon	
WEST VIRGINIA				
Ohio Valley Refining Co., St. Marys	J. P. Flynn	H. J. Crawford	W. R. Reitz	W. R. Reitz
Pure Oil Co., Pure Oil Building, Columbus, Ohio	See Oklahoma			
Standard Oil Co. of New Jersey, 26 Broadway, New York	See New Jersey			
Tri-State Refining Co., Kenova	G. C. Davison	C. T. Evans	C. T. Evans	G. C. Davison
WYOMING				
Continental Oil Co., Continental Bldg., Denver, Colo.	See Oklahoma			
*Midwest Refining Co., First Nat. Bank Bldg., Denver, Colo.	J. D. Clark	[1]M. K. Blackmer	T. A. Pedley	M. K. Blackmer
*Midwest Refining Co., First Nat. Bank Bldg., Denver, Colo.	See above			
*Midwest Refining Co., First Nat. Bank Bldg., Denver, Colo.	See above			
Northwestern Petroleum Co., Osage	Edward Stenger		L. H. Sohn	F. W. Palis
Producers & Refiners Corp., Denver, Colo.	See Oklahoma			
Texas Company, The	See Texas			
White Eagle Oil & Refining Co., Kansas City, Mo.	See Kansas			

[1]N. B. Chenault, vice president American Refining Co.
[2]Jack B. Dale, vice president the Dale Oil & Refining Co.
[3]Joseph T. Gillen, vice president Deepwater Oil Refineries.
[4]F. D. Gatchell, vice president Galena-Signal Oil Co. of Texas.
[5]C. S. Diehl, vice president Grayburg Oil Co.
[6]George H. Taber, vice president Gulf Refining Co.
[7]H. C. Wiess, F. P. Sterling, W. W. Fondren, James Anderson, J. S. Bonner, vice presidents Humble Oil & Refining Co.
[8]W. C. Proctor, F. V. Faulkner, A. C. Ebie, D. C. Stewart, B. H. Stephens, W. H. Francis, vice presidents Magnolia Petroleum Co.
[1]R. S. Ellison, H. G. Naylor, H. C. Bretschneider, vice presidents Midwest Refining Co.; T. A. Dines, chairman of the board.
[2]Thomas S. Cooke, manager, Rocky Mountain division, Standard Oil Co. of Indiana.

Complete list of shut-down plants by states will be found on page 144.

# of Companies and Plants Operating in the United States

General Manager	Plant Supt.	Sales Managers: Tank Car	Sales Managers: Bulk & Serv. Sta.	Name of Company	Plant Loc.	Crude Cap.	Type Plant	Crack. Cap.	Type C. Unit
RHODE ISLAND									
	Thomas Wall			Standard Oil Co. of N. Y.	Providence	10,000	SA&C	6,700	Cross
				Texas Company, The	Providence	2,500	A		
SOUTH CAROLINA									
				Standard Oil Co. of N. J.	Charleston	15,000	SC&A	28,855	Burton, Tube & Tank
TEXAS									
W. P. Youker		O. L. Cordell		Alamo Refining Co.	Isom	2,500	S		
J. D. Wrather	John Wrather	P. H. Hertzog		Amarillo Prod. & Ref. Corp.	Isom	2,000	S		
Bruce S. Allen	G. L. Rowsey	B. D. Dawson	C. N. Dillon	Amarillo Refining Co.	Amarillo	6,000	S&C	3,000	Rowsey
E. A. Allen	D. B. Kelley	H. A. Allen	W. R. Johnson	American Refining Co.	Wichita Falls	5,000	S&C	2,500	Dubbs, Cross.
	George H. Burruss	C. H. Dresser		Col-Tex Refining Co.	Colorado	6,500	S		
	D. H. Hyler			Continental Oil Co.	Wichita Falls	6,000	S&C	2,400	Dubbs
	Roger Q. Traweek	J. L. Wilson	J. L. Wilson	Crown Central Pet. Corp.	Houston	5,000	L&C	5,000	Holmes-Manley
D. G. Gray	George A. Jennings	D. G. Gray	D. G. Gray	Dale Oil & Ref. Co., The	Electra	2,500	S		
J. M. Fouts	Joseph T. Gillen	F. L. Rogers	F. L. Rogers	Deepwater Oil Refining Co.	Houston	2,500	L		
	E. H. Roy			Empire Refineries, Inc.	Gainesville	5,000	S&C	4,000	Doherty, Dubbs
H. W. Roberts	T. P. Cannon	H. W. Roberts		Falls Refining Co.	Wichita Falls	1,500	S		
	E. H. Ferree	R. W. Stone		Freeport Asphalt Co.	Freeport	5,000	T&A		
R. C. Cook	R. C. Kinzer			Galena-Signal Oil Co. of Tex.	Galena	10,000	SL&C	4,000	Burton, Tube-Tank
C. L. Thomson	Frank Hovell	C. F. Watson	C. F. Watson	Grayburg Oil Co.	San Antonio	7,500	S&C	2,400	Dubbs
Charles B. Buerger	Geo. L. Prichard	G. R Nutty	G. R. Nutty	Gulf Refining Co.	Port Arthur	125,000	Comp.	70,000	Gulf, McAfee
	Herman Taylor	See above	See above	Gulf Refining Co.	Fort Worth	6,000	S&C	6,000	Gulf, McAfee
M. H. Hagaman	J. W. Cash	J. H. Howlett	J. H. Howlett	Hagaman Refining Co.	Ranger	2,000	S		
	R. E. Powell	B. H. Brown	J. S. Bonner	Humble Oil & Refining Co.	Baytown	50,000	SL&C	34,000	Tank-Tube, Cross
	R. X. Cook	See above	See above	Humble Oil & Refining Co.	Burkburnett	4,000	S&C	1,000	Tank and Tube
V. E. Jackson	J. W. Beasley	V. E. Jackson	V. E. Jackson	Iowa Park Prod. & Ref. Co.	Iowa Park	2,500	S		
	W. C. Christman	R. E. Benner	R. E. Benner	Keen & Woolf Co.	Clinton	2,000	L		
C. A. Middleton				Kent-Middleton Refining Co.	Angus	3,000	S&C	750	Richey
				Kent-Middleton Refining Co.	Minerva	2,500	S		
	C. C. Benz	D. J. Peters		MacMillan Refining Co.	Isom	5,000	S		
[16]B. H. Stephens	C. S. Dickens	George Miller	A. C. Ebie	Magnolia Petroleum Co.	Beaumont	50,000	Comp.	32,000	Burton, Cross
	J. T. Dickens			Magnolia Petroleum Co.	Luling	5,000	S		
	W. H. Hastings			Magnolia Petroleum Co.	Corsicana	3,000	S		
	John Ricker			Magnolia Petroleum Co.	Fort Worth	15,000	S		
	C. S. Dickens			Magnolia Petroleum Co.	Magpetco	15,000	S		
E. Constantin, Jr.	H. P. Morvant	Jules Constantin	Jules Constantin	Megargel Oil & Refining Co.	Megargel	1,500	S		
W. W. Killam	E. A. Johnson	W. T. Killam		Misco Refineries, Inc.	Mirando City	1,500	L		
	J. T. Miller	W. J. Schnur		Noble Oil & Gas Co.	Burkburnett	3,500	S		
Chas. T. Wolverton	O. L. Anderson			Olney Oil & Refinery Co.	Olney	1,500	S		
W. F. Davis	E. G. Guy	W. F. Davis	W. F. Davis	Orient Petroleum Co.	Wichita Falls	2,500	S		
	F. M. Floyd	B. H. Pitman	A. P. Dyer	Oriental Oil Co.	Dallas	5,000	SL&C	500	Floyd
Roy B. Jones	W. F. Simms	G. W. Reid	G. W. Reid	Panhandle Refining Co.	Wichita Falls	4,000	S&C	1,500	Dubbs
	H. B. Slimp	A. W. Nunn		Pioneer Oil & Refining Co.	San Antonio	1,200	S&L		
H. D. Brin	John Muense	R. C. Brin	J. M. Brin	Primrose Petroleum Co., Inc.	Wichita Falls	1,500	S		
Herbert D. Brin	John Muense	Herbert D. Brin		Printex Refining Co.	Grand Prairie	2,500	S		
				Pure Oil Co.	Smith's Bluff	20,000	T&C	13,000	Cross
	J. B. Joyce	Palmer Hughes	George D. Bowers	Simms Oil Co.	Dallas	4,500	S&C	3,200	Cross
E. G. Goforth	C. E. Robertson	B. T. McNeil		Terminal Oil & Refining Co.	Texas City	3,000	S&C	1,500	Jenkins
	[12]F. P. Dodge	[14] " "	[14] " "	Texas Company, The	Port Arthur	60,000	Comp.	79,200	Holmes-Manley
	L. F. J. Wilking			Texas Company, The	Port Neches	20,000	A		
	H. P. Parrigin			Texas Company, The	Dallas	15,000	Comp.	13,600	Holmes-Manley
	R. T. Colquette	F. D. Bostaph	C. A. Taylor	Texas Pacific Coal & Oil Co.	Fort Worth	3,000	SL&C	1,000	Cross
L. F. Bayer	L. O. Smith	A. F. Garrett		Tidal Western Refining Co.	Burkburnett	3,000	S		
	W. R. Sonricker			Transcontinental Oil Co.	Fort Worth	5,000	Comp.	1,350	Slagter
C. F. Kolp	J. C. Hinds	M. J. Suthpin	M. J. Suthpin	Waggoner Refining Co.	Electra	3,400	S		
	S. S. Dunham			Western Oil Corp.	Wichita Falls	3,000	S		
C. L. Witherspoon				White Eagle Oil & Ref. Co.	Fort Worth	4,000	S&C	1,000	Holmes-Manley
Mrs. P. M. Rideout	W. W. Grimm			Witherspoon Oil Co.	Somerset	2,000	S		
				Yuba Oil Refining Co.	Nacogdoches	100	L		

[12]R. C. Brin, vice president Primrose Petroleum Co., Inc.
[13]W. L. Todd, vice president Simms Oil Co.
[14]D. J. Moran, G. L. Noble, W. W. Bruce, vice presidents The Texas Company.
[15]R. C. Cook, manager refining department Galena-Signal Oil Co.
[16]P. C. Scullin, manager refining department The Texas Company.

[16]The Texas Company sales managers: Northern territory, H. W. Dodge; southern territory, F. T. Manley; export, R. Cullinan; asphalt, W. H. Kershaw; railway sales, William Jervis.
[17]E. E. Plumly, general manager all Magnolia refineries.

UTAH									
J. W. Musser	B. H. Heitcamp			Diamond Oil Co.	Virgin	250	S		[ley
John C. Howard	E. S. Holt	M. J. Greenwood		Utah Oil Ref. Co.	Salt Lake City	4,500	Comp.	5,000	Burton, Holmes-Man-
VIRGINIA									
	C. S. Atwell			Texas Company, The	Norfolk	2,500	A		
WASHINGTON									
S. E. Smith	R. D. Kinyon	S. E. Smith		Spokane Oil & Ref. Co.	Hillyard	1,000	S		
WEST VIRGINIA									
	J. B. Northrop	A. M. Keister	H. G. Triplett	Ohio Valley Ref. Co.	St. Marys	1,000	L&W	300	Snodgrass
				Pure Oil Co.	Cabin Creek	3,000	L&W		
				Standard Oil Co. of N. J.	Parkersburg	4,000	C&L	7,525	Burton, Tube & Tank
F. R. Payne	F. C. Brown	W. H. Seltzer	R. E. Hare	Tri-State Ref. Co.	Kenova	1,000	S		
WYOMING									
	L. E. Chamberlain			Continental Oil Co.	Glenrock	10,000	S&C	3,600	Burton
Thomas S. Cooke	[2]M. G. Paulus	H. G. Naylor		Midwest Refining Co.	Casper	50,000	Comp.	30,000	Burton
	B. L. Warren			Midwest Refining Co.	Greybull	10,000	S&A	15,000	Burton
	J. F. Cullen			Midwest Refining Co.	Laramie	3,000	S	4,500	Burton
F. W. Palis	F. W. Palis		F. W. Palis	Northwestern Petroleum Co.	Osage	300	S		
	L. M. Johnston			Producers & Refiners Corp.	Parco	8,000	S&L	5,000	Dubbs
	A. S. Bailey			Texas Company, The	Casper	6,000	Comp.	7,800	Holmes-Manley [kins
	J. W. Glass			White Eagle Oil & Ref. Co.	Casper	3,000	S&C	2,200	Holmes-Manley, Jen-

[1]All Midwest plants are leased by the Standard Oil Co. of Indiana, which also owns all the cracking plants. See Indiana for personnel of Standard company.
[2]Mr. Paulus is superintendent of plant No. 3. R. M. Andrus is manager and A. E. Thompson superintendent of plants 1 and 2.

Complete list of shut-down plants by states will be found on page 144.

We
Design—Furnish—Erect

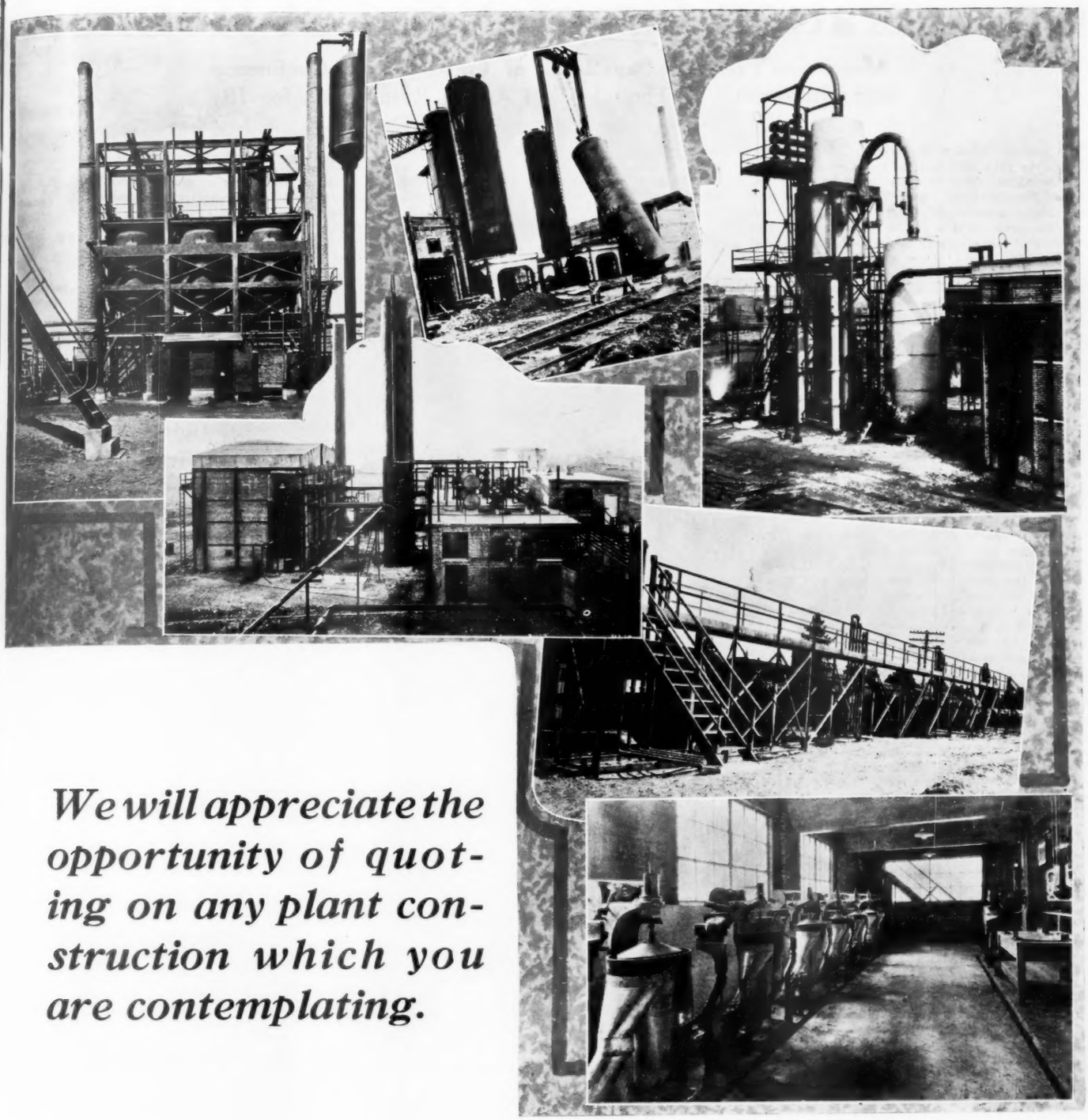
Complete Refineries.
Fractionating Towers.
Pipe Stills.
Shell Stills.
Treating Plants.
Wax Plants.
Power Plants.
Gas Recovery Plants.
Filter Houses.
Economizers & Heat Exchangers.
Piping & Equipment Installations.

ASSOCIATES

The WIDDELL ENGINEERING CO.
CONSULTING ENGINEERS

ARTHUR G. McKEE & CO.
ENGINEERS & CONTRACTORS

2422 EUCLID AVE CLEVELAND, OHIO



We will appreciate the opportunity of quoting on any plant construction which you are contemplating.

ASSOCIATES

The WIDDELL ENGINEERING CO.
CONSULTING ENGINEERS

ARTHUR G. McKEE & CO.
ENGINEERS & CONTRACTORS

2422 EUCLID AVE CLEVELAND, OHIO

Co-operation Great Need of Refiners

Association President Says Lack of Conservatism, Confidence and Uniformity of Thought and Action Responsible for Ills

By P. M. Miskell*

The refinery industry in entering into its activities for the year 1927 was, as usual, confronted by many problems. Most of these, however, were but legacies from previous years. While it is true that the relative importance of problems may not remain the same—still a list of those of real and fundamental importance to the industry today would be but little different from a list compiled when any Mid-Continent plant was constructed.

Probably we all make a practice—and it is an excellent one—of pausing for a moment when a new year dawns to contemplate our past activities, take stock of obstacles that may impede our progress and plan future activities in line with policies we consider best suited to our needs. However, when the same problems continuously exist and when these problems bear neither relationship nor pay attention to mere changes in the calendar, our contemplations of events and changes in policy to be of practical benefit must be made each day, each week, each month, and not restricted or affected by the annual survey too many deem of such importance.

The first of almost every year a spirit of optimism pervades the industry. We have sought out the factors that enable us to gauge the pulse of general business and anticipate demand for products with some precision. We compare, we analyze and we chart the factors we have found, and appear surprised that the problem of demand offers no difficulties beyond our powers of immediate solution—and it is usually upon such an unimportant conclusion that our optimism is founded.

Of the problems that always face refiners, many can be dismissed in the somewhat perfunctory manner with which we treat demand. Raw material is abundant; supply of any product can match demand; manufacturing efficiency is constantly improving; sales organizations have demonstrated their ability to dispose of products; ultimate consumers' prices and the cost of crude present a fairly even margin; transportation, while restricting the limits of the area of profitable operation, offers nothing new beyond the necessity for a close examination and action to prevent undue discriminations; quality of goods is being successfully maintained by our technologists; and service from the standpoint of either carload customers or consumers, is all that should be desired.

Price Reflects Skill

Probably the matter of price would ordinarily be termed the greatest problem of refiners. Price, of necessity, must always affect our profit and profit is the very essence of our business. The desire for profit inspired the erection of our plants and the same desire insures the maintenance. However, in reality, price is not a problem, but a reflection of the skill with which we weld the factors of our business—the composite result of the wisdom of the industry may exercise in the solution of all its problems.

The industry has progressed in many ways, but when profits disappear, or are impaired, we must concede there is some error in our business conduct. In view of our accomplishments and in view of the fact that price and profits often fall below the levels to which we are entitled, I believe the errors responsible for such a situation must fall within the limits of remedies the industry has failed to try. We should, therefore, review our actions and by elimination detect the errors of omission, if we are to find our greatest need, and obviously our greatest danger must lie in failure to do the proper things when these omissions are brought to our attention.

Conservatism and Confidence

If I were asked to state the greatest problems of the industry, I would go down the list and far beyond crude supply, technical development, sales ability, transportation, markets and the many things so commonly deemed our greatest problems, I would seek problems that, while never new, have always remained obscure and the subject of least

P. M. Miskell

attention—problems suggestive of things we lack and have made but little effort to secure. In my opinion, the greatest problems of the industry during the present year, or to state it in another form, the greatest difficulties we must overcome are lack of conservatism, lack of confidence and lack of uniformity of thought and action. These three things the industry has never had. All are associated with our mental attitude and all closely affect our profit.

We need the conservatism that leads to a careful appraisal of the factors of our business; that cautiously provides the flexibility in operations to meet the constant changes in conditions; that realizes that programs of expansion should be based on some superiority in goods, service, or ability; that cautiously weighs the chances for success before each step is taken.

We need the confidence that leads to an appreciation of the necessity for our plants; that results in faith in the stability of demand; that leads to a proper appreciation of the value of our products; that discounts rumors and accepts but facts.

We need a uniformity of thought and action that leads to the adoption and enactment of policies suggested as advisable by whatever conditions may prevail.

Regardless of the situation of the moment there are always countless opinions regarding what can or should be done. The diversity of these opinions and the resultant diversity in actions are conclusive proof that the vast majority of refiners are often wrong. There must be co-operation, not in the usual sense that contemplates procedure along some previously decided course, but the greater co-operation, resulting from definite knowledge of affairs within the industry and definite knowledge of the effect of economic laws, that will result in a similarity in the conclusions of refiners under all conditions and a responsive similarity in the policies, or actions, they adopt.

*President, Western Petroleum Refiners Association; vice president and general manager, Empire Refineries, Inc., Tulsa, Okla.

Keep Output in Line With Needs

L. L. Marcell*
Vice President, White Eagle Oil & Refining Co.

Regarding the prospects in the refining division, it is my opinion that the period of rapid expansion is nearly over as the refiners have been very active during the last three or four years in installing modern equipment for cracking, reduction of evaporation losses and other plant efficiencies. This does not mean that further progress will not be made, but it will not necessarily be so fast. Not only have the manufacturers increased the quantity of gasoline with the use of more modern equipment, but they have improved the quality even more. At no time during the life of our great industry have the consumers been furnished such quality as they are now using, not only in gasoline, but lubricating oils and other products.

Experience is a good teacher, even to an oil refiner. The policy is now to increase the quantity of manufacture as consumption requires rather than store excess manufacture as was the former custom. The closed automobile, better roads, more efficient starting devices of the automobile, the large increase in gasoline consumption in public buses and many other things have made gasoline less seasonable in consumption. Therefore, most refiners are equipped to take care of the peak load in consumption by increased manufacture rather than by storage. The constructive refiner of today will consider carefully his ability to market the product of his manufacture before increasing his refining output.

There have been a few periods in the last several years when the refiner was anxious about an ample supply of crude oil, but the producer, by employing modern methods of finding and drilling for oil, has increased the supply until it is sufficient for any requirement that the refiner may have. The public, on account of this ample supply of raw material, will be able to purchase oil products at a reasonable price, which will not retard consumption nor encourage substitutes.

The refining business now is so highly competitive that only nominal profit can be made and then only

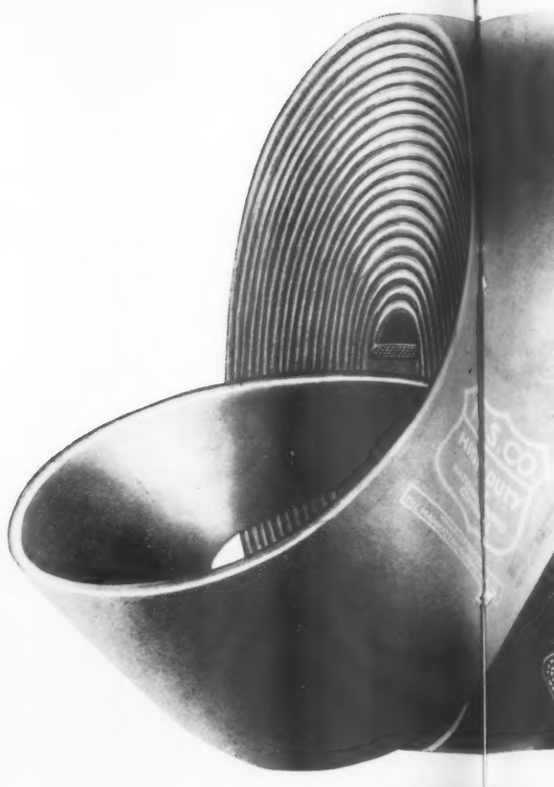
L. L. Marcell

by the efficient refiner with a modernly equipped plant. The refining of yesterday was a simple operation with nominal investment of money, while the refining of today is a technical operation with exceedingly large investment required.

*Vice president, American Petroleum Institute, representing refining industry.

Vogt Drop Forged Steel Gate Valves
For High Pressures & Temperatures

HENRY VOGT MACHINE CO.
INCORPORATED
LOUISVILLE, KENTUCKY



MANHATTA

THE NATIONAL SU

AN BELTING
UPPLY COMPANIES

California Refined Market Outlook

Present Statistical Situation Encouraging. Future Price Situation Largely Dependent on Developments in Other Areas

By Carl J. von Bibra

This is being written at the end of February. Just two days have passed since important cuts in crude oil prices have been announced east of the Rocky Mountains. Producers and refiners in California are naturally on edge at the present moment, wondering whether crude prices in this area will also be reduced because to a very large extent the markets of the Mid-Continent and eastern refiners are also those of the California refiners. It is therefore obvious that during these few days of great uncertainty during which well-defined opinions will crystalize in California either for or against the probability of immediate price changes in this area, is an exceptionally unsatisfactory time at which to try to describe the outlook for the balance of the year. It is somewhat like trying to predict the outcome of a war on the eve of a battle to be fought by two well-matched armies.

Statistical Position

The statistical position of the California oil industry is relatively good when California is considered as an individual entity. On January 31, 1927, there were in storage on the Pacific Coast 148,327,000 bbls. of oil as compared with 158,394,000 bbls. a year previous. During that year the oil consumption of the market which can normally be reached economically only from California has shown a considerable increase, particularly as regards gasoline. The draught on stocks amounting to 10,000,000 bbls. to a very great extent reflects this increased consuming capacity of a normal Pacific Coast market. As far as the American Atlantic Seaboard and European markets are concerned, California was still able to compete quite favorably during 1926, although distinct evidences developed that increasing competition would have to be reckoned with from other sources.

The most formidable of these is Russia. What the balance of the year 1927 will bring forth in this connection is not easy to determine. It seems reasonable to assume, however, that mounting production in Russia, Rumania, Venezuela and possible increased activity in Persia and the Dutch East Indies, will more than offset any decline in shipments from Mexico. If this is the case, the enormous flush production of Oklahoma in particular would create a surplus for the world market. It is obviously not intended nor is it feasible to store this greatly increased Mid-Continent production and that a very large part of this increased production will be sold in the world's markets can safetly be assumed as a direct result of the lower price schedule now in effect. For California this can mean only one thing. The Pacific Coast will either have to store its share of the petroleum products which in the months to come will be supplied in the export and Atlantic Seaboard trade from Gulf ports or California will have to cut its prices in order to continue to sell in these markets in competition with Gulf ports. There is one influence now at work which favors storing part of the current California production rather than offering it competitively at lower prices.

Tanker Shortage

The influence which is forcing the storage of petroleum products on the Pacific Coast at the present time is the shortage of tankers available for charter. This has been serious for some time and shows no likelihood of easing off in the near future. Many interesting reasons are being given for this shortage of tanker charters. The general consensus of opinion among shippers on the Pacific Coast is that the shortage is primarily due to the withdrawal of ships from the ordinary channels of trade by wholesale chartering of all available bottoms by the British. Their chartering activities are supposed to hinge largely on the Admiralty fuel requirements in connection with the unfortunate trouble in China. Another factor responsible for tying up some additional ships is the fact that much of the fuel oil which has for some years been supplied to the Argentine and similar markets from Tampico is now being lifted at Los Angeles. The haul from Los Angeles is practically twice as long as that from Tampico and therefore requires twice as much tonnage to supply the same requirements.

Practically every one of the major marketing companies in California is at the present time very seriously handicapped for lack of ships. This applies equally to dirty bottoms for the transportation of gas oil and fuel oil as to clean bottoms for the movement of gasoline. During the past 60 days there have been very considerable increases in gasoline stocks in California which reflects the lower Pacific Coast consumption during the winter months in addition to the difficulty of moving the commodity in the intercoastal and export trades because of the tanker shortage just referred to.

Cracking Facilities

While speaking of increases in gasoline stocks on the Pacific Coast, it is well to mention the fact that the production of gasoline has increased very considerably in California during the past year. For instance, during August, 1926,

(Continued on Page 174)

Natural Gasoline in California

Large Increase in Production Factor in Market of All Motor Fuels

By Paul D. Barton

President California Natural Gasoline Association

The very close relationship between the refining and natural gasoline industries in California requires that any general discussion of the economic conditions affecting the future of one of them must also take into consideration the other. While classed as separate industries, several conditions more or less confined to California, tend to merge the two in actuality. The most important of these conditions is the imperfect balance between the proportionate production of straight-run gasoline and fuel residua in relation to the domestic consumption of these two commodities.

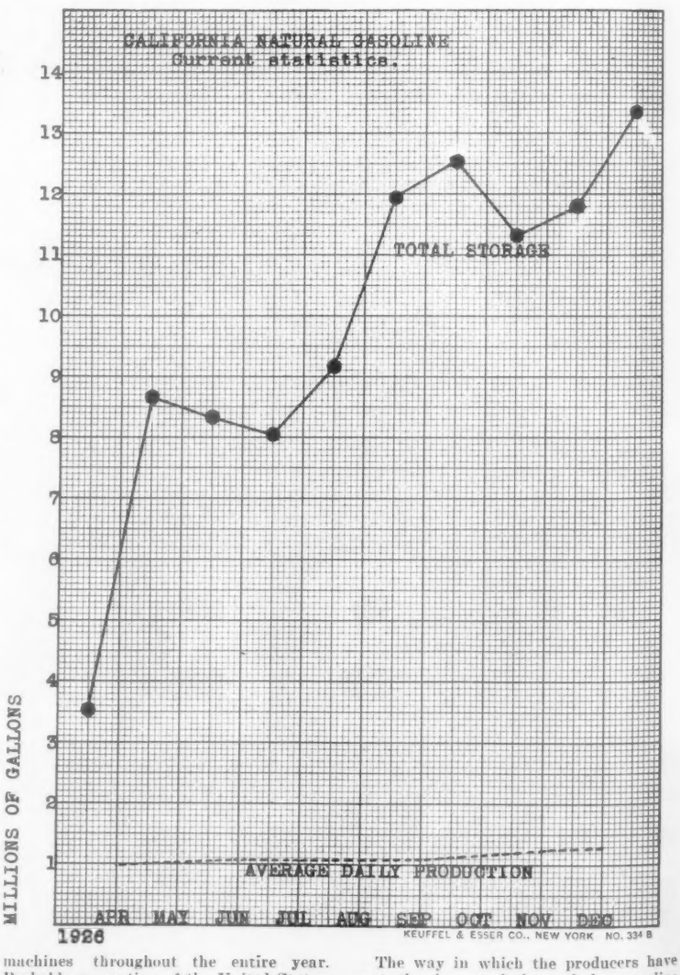
Refinable Crude Production

During the past five years, the proportion of light or refinable crude oil (20 degrees A. P. I. and higher) to that of heavy oil production, has been increasing steadily. This has been due to both the discovery and development of fields producing the lighter crudes and to the shutting-in of heavy oil production. Development work in the heavy-oil fields has also been held to a minimum. The result is that of the total California crude oil production at the beginning of 1927, only about 15 percent falls in the heavy-oil classification. It is doubtful is this heavy-oil production can be reduced very much further The smaller producers will continue operating as long as they are able to show a profit, and the major companies have their definite lease obligations to fulfill. The natural decline of the heavy-oil wells already drilled is in general very much slower than that of high gravity wells, this factor likewise tending to maintain or increase the present heavy-oil proportion.

The policy of controlled production, holding back heavy oil and developing the lighter wherever practicable, is mainly responsible for the enormous increase made by California in recent years in the total quantity of crude oil produced. Intensive drilling has followed each discovery of light oil production. The average yearly production of crude oil for the past five-year period is more than double that of any previous five-year period in the history of the oil industry in California. But even though this great increase in oil production has been in refinable crude, the refiners have not been able to control the proportion of the two main commodities to fit the demand of consumption.

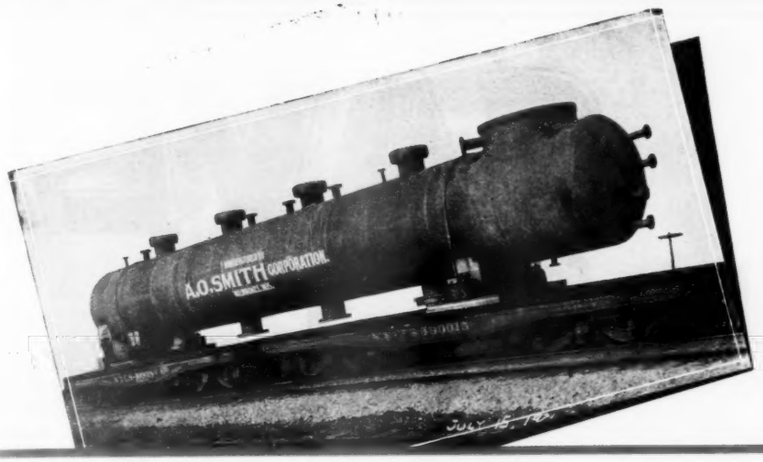
Increasing Demand for Gasoline

Motor vehicle registration in California has been increasing by leaps and bounds. Indications are that the total number of motors being operated in the State in 1927 will reach 2,000,000. The peculiar combination of climatic and living conditions is such as to favor the daily use of the great majority of these machines throughout the entire year. Probably no section of the United States, of comparable importance, approaches the average mileage per car per year as shown by California. This is directly reflected by the unparalleled increase in the domestic consumption of motor gasoline, a consumption which is steady the year around.



The way in which the producers have met the increased demand for gasoline has already been discussed. The refiners have been at work too, and not with-

(Continued on Page 176)



Picturing One Year of Progress

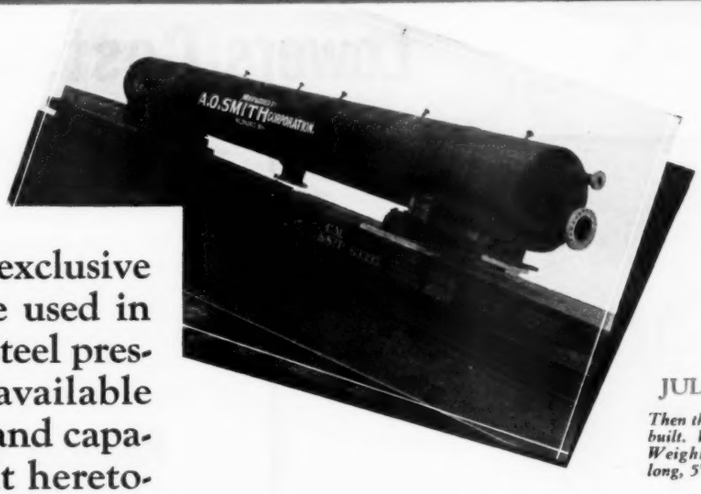
JULY 15, 1926

Largest ever built. Walls 3½" thick. Weight 268,800 lbs. 65' long, 8' diameter.

Any Wall Thickness Required!

MAY 30, 1926

Then the largest still ever built. Walls 2⅝" thick. Weight 144,000 lbs. 65' long, 6' diameter.



JULY 25, 1925

Then the largest still ever built. Walls 2½" thick. Weight 76,000 lbs. 41' long, 5' diameter.

The entirely new and exclusive methods of manufacture used in the production of Smithsteel pressure vessels have made available for the oil industry sizes and capacities in such equipment heretofore considered unobtainable.

In step with the progress being made in refinery methods Smithsteel Cracking Stills are being supplied in ever increasing dimensions —"in any diameter, of any length, to withstand any specified pressures to meet all operating conditions."

A. O. SMITH CORPORATION

TULSA *Milwaukee, Wis.* LOS ANGELES

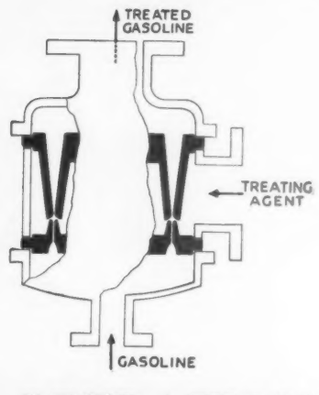
SMITHSTEEL
CRACKING STILLS

In Gasoline Treating SAVES M and B

The Master Mixer Head

The MASTER MIXER

Lowers Costs—Raises Efficiency—



OPERATION
In *Treating* Gasoline

Gasoline is pumped into receiving chamber of Head, whence it passes thru especially designed jets at high velocity, into a zone containing the treating agent. By siphonic effect, the treating agent is drawn with the gasoline, thru constricted openings above each jet, into the turbulence chamber. This process causes a most intimate contact—practically a temporary atomic union—between the gasoline and the treating agent.

Leading refiners in California and the Mid-Continent Field have had the Master Mixer Head Method in operation long enough to prove conclusively its vastly greater economy and efficiency. Without exception, refiners who have adopted this method report that the Master Mixer Head definitely reduces costs and at the same time gives more satisfactory results than their former methods of treating and blending gasolines.

Reduces Treating Costs 20% to 80%

INSTALLATION COSTS are tremendously reduced because the simple Master Mixer Head replaces all the expensive agitators, foundations, compressors, pumps, etc., and requires no buildings, as installation is in the open. OPERATING COSTS are sharply lowered because evaporation is practically eliminated, batch handling is replaced by continuous operation, less treating agent is used, a great saving in labor is effected, and less time is required to handle a given volume.

In Blending Gasolines

The Master Mixer Head saves INSTALLATION COST by replacing agitator equipment. It lowers

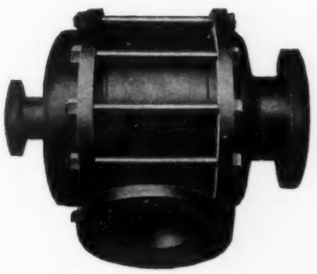
PETROLEUM APPLIANCE COMPANY P

S MONEY

nd Blending Processes!

XER HEAD *Method*

ncy—Gives More Intimate Contact



—Fully Patented
Pat. No. 1,616,209

OPERATING COSTS because evaporation is reduced at least 50%, tedious batch handling is replaced by rapid, continuous operation, only one pumping is required, and labor and time are saved.

A complete and fixed mixture is obtained immediately. Desired ratio of natural gasoline to still gasoline, in the blend, is easily secured and accurately maintained by proper set-up of valves from pump and stock tank.

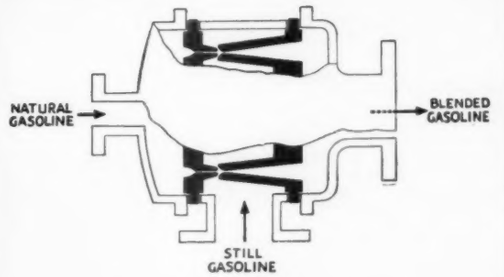
OTHER USES

Because it provides an economical and efficient means of obtaining extremely intimate contact between any liquids, the Master Mixer Head proves ideal for many purposes. It is used for compounding lubricating oils, on dephlegmators, evaporating towers, pipe stills and steam stills, for dehydration of oils, etc. Our engineering department is at your service. *Write us fully.*

Petroleum Appliance Company
2311 W. 9th St.
Los Angeles, Calif.

Exclusive Mid-Continent Distributors:

WESTCOTT & GREIS, Inc.
Tulsa, Okla.



OPERATION
In *Blending* Gasoline

Natural gasoline is pumped into receiving chamber of Head, whence it passes thru specially designed jets at high velocity, into a zone containing the still gasoline. By siphonic effect, the still gasoline is drawn with the natural gasoline, thru constricted openings in front of each jet, into the turbulence chamber. The combination of velocity, turbulence, and siphonic action, causes an exceedingly intimate contact and mixture. The process is continuous, the only control that is necessary being the proper setting of the valves from stock tank and pump.

PETROLEUM APPLIANCE COMPANY

Making Special Naphthas Is Costly

Petroleum Solvents Find a Variety of Uses, While a High Degree of Specialization Is Centered in Their Manufacture

By W. T. Ziegenhain

As the need for quick-drying solvents increased with the general development of the industries, petroleum naphthas found favor and have been especially applied in dry cleaning work and in the manufacture of paints and rubber.

The specifications in each of these uses are very similar and are often modified so that the same oil may be used in several processes. The essential points in each case are that the naphtha must readily evaporate to dryness, leaving no stain, and, yet, not contain a sufficient amount of low-boil ng hydrocarbons to make it dangerous to store or handle at room temperatures. For use in dry cleaning it must not discolor the fabric nor corrode the metal buttons or ornaments and similarly must not discolor the pigment when used in pain s.

A recently adopted cleaners naphtha is covered by the following specifications:

Stoddard Solvent

1. The solvent must be free from undissolved water and suspended matter.
2. Color—Water-white.
3. Doctor test—Negative.
4. Unsaturated hydrocarbons — Not more than 2 per cent of the naphtha shall be soluble in concentrated sulphuric acid.
5. Distillation range—Initial boiling point not less than 300 degrees Fahrenheit; dry or endpoint not greater than 410 degrees Fahrenheit.
6. Acidity—The residue remaining in the flask after the distillation is completed shall not show an acid reaction.
7. Aromatic hydrocarbons—The naphtha shall not contain aromatic hydrocarbons, such as benzene, toluene and others.
8. The odor shall be sweet.
9. The flash point shall not be lower than 105 degrees Fahrenheit.

Although these specifications have been outlined by the dry cleaners the cost of manufacturing a naphtha to pass these is relatively high and for this reason substitutes have been accepted in many cases. Furthermore, several refiners previously had developed and standardized special naphthas, and as these were satisfactorily used under well-known trade names these refiners chose to continue to supply the same quality except when a change was asked. Tests on some of these naphthas are shown in the accompanying table indicating the rather wide difference in quality. These samples were picked at random and they may be considered representative of the naphthas being offered to the trade.

When naphthas are used by the dry cleaners they usua'ly are reclaimed by centrifuging, filtering or distilling and it practically always will pay to buy a good grade, for, although the initial cost may be higher, the decreased losses in evaporation when rehandled will soon more than equalize the difference in price.

For Painters' Use

The painters' use of petroleum naphtha is principally in preparing quick-drying paints or as a solvent for certain lacquers. The speed of drying is of greatest importance here so long as the oil will not stain or change the color of the pigment. The odor is of some importance because even a trace of a bad odor will be magnified as the paint is applied over a large surface in a thin film that dries rapidly. For this reason, the specifications usually call for a doctor sweet product and are further supplemented by the specific requirements that the odor be sweet.

To manufacture these naphthas special distilling equipment is needed, and the processing must be controlled carefully. In meeting the high initial point required for safety, it usually is necessary to make a second distillation of a benzine cut. But in some cases the crude contains practically no light fractions and by running the stills slowly and by having more than the ordinary tower capacity the naphthas may be made during the inifial distillation. This latter method of processing requires a relatively large investment in towers, considering the volume of the distil'ate recovered, but may be jus ified where the production of these naphthas is a regular procedure. These special towers eliminate the investment in rerun stills and eliminate the excessive evaporation losses during rerunning, which may amount to 8 per cent of the benzine distilled and increases the production cost from 2 to 3 cents over that of ordinary 400 endpoint gasoline.

Although the choice of crude and the close control of the distillation is of primary importance, a careful chemical treatment must follow in meeting both the corrosion and the doctor tests. The treatment will differ for each crude, and the treating problem must be solved by the individual plant operators and laboratory through trial.

But even the most severe treating problems may be solved by alternately treating and rerunning so that the problem resolves itself into first acid and doctor treating a benzine cut, rerunning, doctor treating the naphthas, using an excess of chemica's in all cases, and then going back and systematically cutting down on the amount of each, and eliminating one of the treatments or eliminating rerunning if possible. The extent of the cheapening of the processing will be limited by the specifications to be met.

Highly Specialized

Because the manufacture of these naphthas is so highly specialized and because the total volume is relatively small most refiners find very little profit in their manufacture so that a large percentage of the production comes from refiners running selected crudes and who specialize in their manufacture, making little or no gasoline. Or, in the case of the large refiners who make these naphthas a department is set aside specifically for this use. This is done because the quality of the gasoline is impaired when any great amount of these naphthas are taken out of the regular cut of gasoline.

A representative distillation curve for U. S. Motor gasoline made direct from crude appears in Figure 1 accompanying this article. If cleaners' naphtha is taken from the crude the distillation curve of the resultant gasoline will tend to appear as in Figure 2. The latter gasoline is not balanced and will not be as efficient motor fuel as the one con-

(Continued on Page 178)

LABORATORY TESTS ON VARIOUS CLEANERS' AND PAINTERS' NAPHTHAS

Gravity	53.8	55.8	49.5	49.4	58	49.2	57.9
Initial	212	210	260	272	204	300	214
10%	242	244	302	306	228	320	224
20%	256	250	314	312	234	376	230
30%	260	256	320	320	240	330	236
40%	270	262	324	326	245	332	242
50%	276	270	330	330	252	336	246
60%	287	278	338	336	258	340	254
70%	300	286	342	346	264	346	262
80%	314	292	350	360	274	356	276
90%	340	312	360	372	290	366	296
95%	360	328	372	386	308	390	
Endpoint	402	372	410	424	348	418	348
Loss	1%	1%	1%	1%	1%	1%	
Flash		Low	96	92		103	
Fire		Low	106	108		122	
Color	17	25	25	21	24	22	25
Doctor	Sweet	Sl. sour	Sweet	Very sl. sour	Sweet	Sweet	Sweet
Unsaturated	5%	6%	7%	12%	2%	6%	
White lead (discolor) 2 hours	O. K.	None	None	None	None	None	
Odor	None	None	None	None	Not ment.	Not ment.	
Grease left	None	None	None	None	Not ment.	Not ment.	

Changed Sales Policies Will Feature 1927 Refinery Program

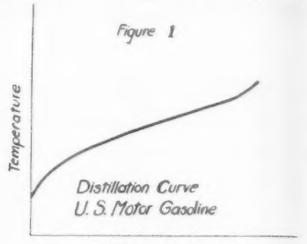
By Berry V. Stoll

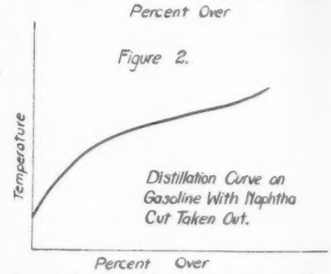
Vice President, Stoll Oil Refining Co.

During the past few years we have seen a big change in the oil refining situation. After the war skimming plants grew up like mushrooms and every rolling stone who thought he knew something about skimming off gasoline tried to promote an oil refinery, and as a result there was an over expansion of the refining industry which led to a large financial loss to many investors, but this sort of situation cannot occur again. The modern refinery is an expensive proposition and everyone knows that the old-fashioned plant cannot compete. Out of date refineries are being abandoned or being modernized and the refining industry has brought itself up to a base of efficiency so that it figures its cost in terms of a fraction of a cent. This condition of striving for greater efficiency will of course continue and refining costs will be cut lower and lower with improvements in methods of cracking and other phases of refinery operation.

In other words, the mechanical end of the refining business should be complimented on its improvements in the past and still better achievements are ahead for the future. Only recently have large refineries begun investigating their methods of disposing of their goods. Heretofore, refiners have simply sought to reduce their cost by greater volume and by greater efficiency and have not thought much about their cost of distribution and the future is going to bring about a study of this cost. With the old method a refinery had its storage tanks full of gasoline and the sales manager called up some broker and disposed of it at a considerable cut; the broker then disposed of the gasoline as best he could, trying to get as near the market as possible. This often caused gasoline to be offered at very low prices. With the present method the large refineries call up some very large buyer who does not re-sell gasoline and gets rid of 25 or 50 cars of gasoline without disturbing the general market.

The future year should see a continuation of this policy and as overproduction becomes a thing of the past, refiners will be as much interested in seeing that their gasoline is not breaking markets as they will in seeing that their gasoline is made by the most efficient process of refining and giving them the largest yield possible. A legitimate oil jobber has certain expenses that have to be met and when some sma'l jobber comes into the field and feels that he is operating without overhead expense, the refiners should protect the jobbers who have been disposing of the refinery products regularly, and not sell to the price cutter at a price that is often lower than they are selling through legitimate jobbing trade regularly.

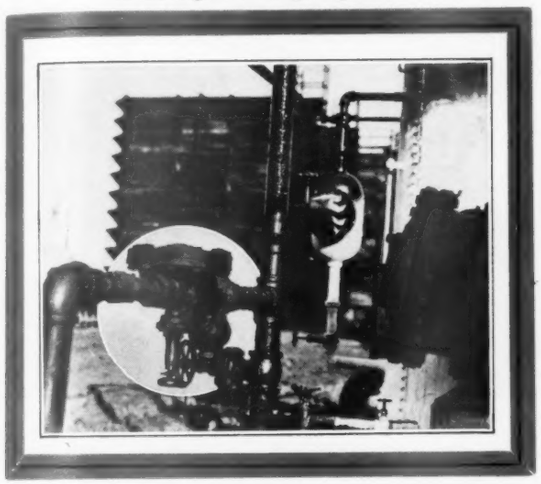




Fisher ENGINEERING

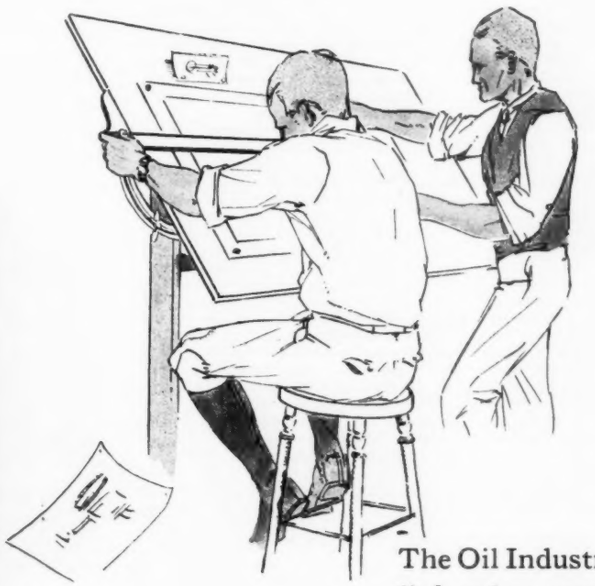
The Fisher Type 295 Ultra-Sensitive Relief Valve is as sensitive to pressure changes as it is possible for human ingenuity to make it.

In one of the plants of the Roxana Petroleum Corporation the record of the regulation of the pressure by this valve is almost a perfect circle, showing that its sensitivity causes it to respond immediately to the slightest change in pressure.



Above is a picture of the Fisher Type 295 Back Pressure Control Valve, operating on stabilizers in Natural Gasoline plant, Oklahoma.

FISHER
TRADE MARK
REGISTERED



The Oil Industry demanded a relief valve more sensitive than those already in use; the engineering staff of The Fisher Governor Company went to work. There was nothing very difficult about it—the problem was there, the need apparent and the result was the Fisher Ultra-Sensitive Relief Valve Type 295—a complete and satisfactory answer.

A regulating device, if it is to function properly, requires correct mechanical construction, good materials and careful workmanship—all of these are basic in Fisher Specialties. We go further than this, we comprehend the application of our experience to the interpretation of your order. If we know exactly what service a device is expected to perform, we can make it, and often times suggest means of lessening initial outlay and reducing maintenance costs.

THE FISHER GOVERNOR CO.

391 FISHER BLDG.

MARSHALLTOWN, IOWA, U. S. A.

Research in the Petroleum Industry

Some of the Leaders Engaged in Technological Development and What They Are Doing

By Benjamin T. Brooks

All great industries include individual companies that exemplify the greatest extremes of progressiveness and backwardness. As a general rule the progressive companies are big companies and their progressiveness is the reason they are big, and the backward companies are usually small, and small because they are backward. Progressiveness and up-to-date operating efficiency naturally does not mean solely spending a large amount of money on research. There is, first of all, the application of the best geological knowledge, aided by specific scientific methods, to the discovery of oil, the best engineering methods in drilling for it, the most economic transportation of it, the most efficient refining of it and the best adjustment of the production of the various possible products with changing demand, the fullest utilization of scientific information in aggressive salesmanship, and finally the most efficient organization and management of the whole company machinery. The lack of a good research and development department is a pretty good indication however that the company's other departments are below par. Lack of a good chemical department means that the accounting department probably is also bad.

One of the most valuable functions which a research and development department can fill is the quick evaluation of inventions and developments of its own organization. Any company which has a good scientific organization and does not use it to the fullest possible extent in this way, realizes less than half of its potential value. Some companies do utilize their scientific staffs in a consulting and advisory capacity but not to the extent that is practiced in the German chemical industries; namely, including one or more scientific men on their boards of directors.

Cracking an Example

An illustration of the evaluation of work done by others is the fact that most companies that have developed successful cracking processes have acquired many patents bearing on the process, from others. The Standard Oil Company of New Jersey acquired the Ellis patents, the Standard Oil Company of Indiana developed the Burton process and followed this with a number of important specific patents, but later adopted the Holmes-Manley process which had been developed by The Texas Company. The evaluation, both from the patent and technical points of view, of a certain group of important cracking processes and various elements or individual features of these processes, was a task of no small magnitude.

Very recently the public press carried many columns describing two foreign processes which, according to some accounts, would soon put the American petroleum industry out of business. Indeed all of these dire prophecies may be fulfilled some time in the dim future, but it is safe to say that the officials of those companies having competent technical staffs capable of evaluating these announcements, did not suffer from goose flesh.

Mellon Institute Work

When about 16 years ago Dr. Robert Kennedy Duncan conceived his organization of the Mellon Institute of Industrial Research, Doctor Duncan recognized that many large companies carried on industrial research in a large way. He believed, however, that industry as a whole would be greatly benefited if other companies, not so large and wealthy as the exceptional ones, could be helped and stimulated in carrying out industrial research. Without doubt the type of organization exemplified in the Mellon Institute is the most economic method of carrying on industrial research under competent direction and with the advantage of the most complete apparatus and library facilities, which has ever been put forth. Yet the history of the Mellon Institute since its organization shows very clearly that it has been the large and progressive companies which have realized the possibilities of such research and have for the most part taken advantage of the opportunity afforded by the Mellon Institute and its facilities. The Gulf Refining Co. has maintained petroleum researches in the Mellon Institute since 1911. The director of the Mellon Institute is Dr. E. R. Weidlein and W. A. Gruse has direct charge of the petroleum work.

Los Angeles laboratory of the Union Oil Co. of California.

Interior of one of the laboratories of the Standard Oil Co. of California.

That a properly run research organization involves more than a small chemical laboratory is shown by the research organizations of the Standard Oil Co. of New Jersey and the Standard Oil Co. of Indiana. The former company has an excellent main laboratory building and in addition to this building has several others in which work of a specific chemi-

(Continued on Page 157)

Increased Gasoline Recovery Source of Danger to Refiners

By George D. Locke

Vice President, Barnsdall Refineries, Inc.

The developments in the refining industry during 1927 will be increased yields of gasoline from a barrel of crude, and with this increased yield lies our greatest danger—over-production—which has really been the source of all of our troubles during the past six years. To my mind, therefore, every refiner should analyze his own situation, and see that during the coming season there is no over-production of gasoline. With his new facilities for producing larger yields of gasoline he should restrict his crude runs accordingly.

With the development of the oil burner for heating homes, we should in time have a wonderful demand for furnace oil, and this should have a tendency to stabilize our markets and permit us to sell gas and fuel oil in the winter time at a high enough price to enable us to shut down our cracking units and operate them during the spring, summer and fall in the peak of consumption of motor fuel. Since there are 25,000,000 homes in the United States, it is fair to assume that within the next five years one-fourth of these homes will be using oil for heating purposes and when one considers that the average consumption of heating oil in the home from October to May is 3,000 gallons per home, you have a stupendous figure of 18,750,000,000, over eighteen billion gallons of heating or furnace oil—which is almost twice the amount of motor fuel consumed in motor cars, busses, tractors and trucks.

With this tremendous gallonage soon to be demanded of the refining industry, therefore, I am naturally optimistic and believe that with increased consumption and curtailment of production the unsettled conditions prevailing will soon be stabilized. This should also give the refining industry an opportunity to overcome during the next five years some of the losses sustained over the past six years.

What a Water Softener Will Do!

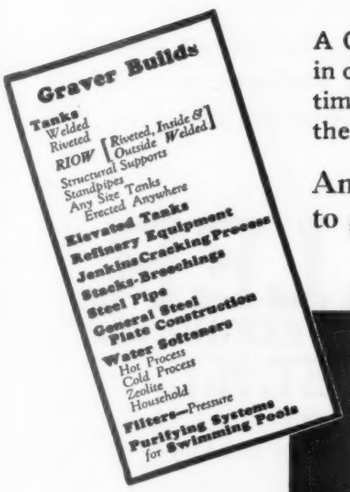
In Your Steam Power Plant

1. Allow your boilers to give their original designed capacity.
2. Eliminate tube renewals.
3. Keep boilers on stream continually.
4. Reduce fuel requirements.
5. Give you dry steam—no foaming or priming.
6. Reduce the number of boilers necessary for maintaining load.

In Your Natural Gasoline Plant

1. Give you maximum cooling in your coils greatly reducing investment for cooling equipment.
2. Allow your gas engine to function properly without overheating.
3. Stop continuous delays and shutdowns due to breakage caused by overheating.
4. Allow the use of any convenient water supply.
5. Eliminate the continual cleaning of coils.

THESE are just a few of the many savings from water softening. To secure the maximum results, it is necessary that the type of softening equipment be adapted to the requirements of each installation. For many years GRAVER Corporation has built all types of water softening equipment. Because of this and from the knowledge gained through long association with the oil industry GRAVER can recommend with assurance and without bias the correct type of softener for every use.



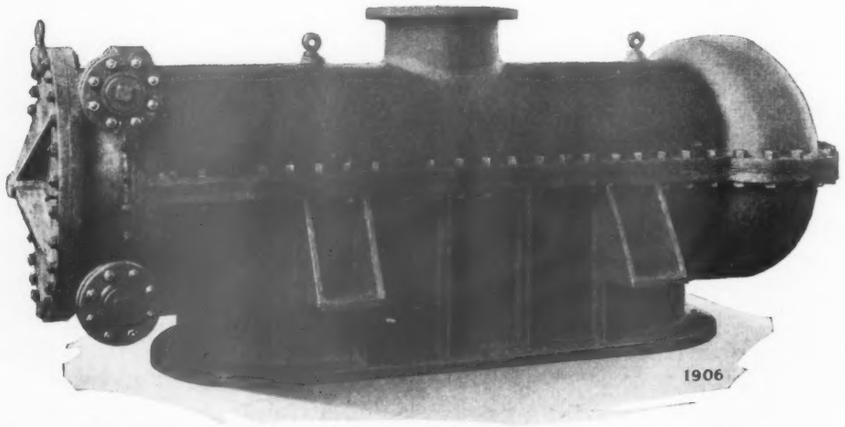
A GRAVER water softening plant will, in nearly every case, pay for itself in one year or less in tangible savings. The intangible savings (no loss of time—easier operation—lass maintenance) are often of greater value than the tangible.

An experienced GRAVER water softening engineer will be glad to go over your water conditions with you.

GRAVER Corporation Founded 1857
EAST CHICAGO, INDIANA

NEW YORK Grand Cent. Term. | CHICAGO Steger Building | TULSA Atlas Life Bldg. | HOUSTON West Building

Better Lubricating Oils Distilled Under Vacuum



(Pat. applied for)

Split Shell Heat Exchanger for vacuum service. Notice large vapor inlet.

WHEELER
Oil Refinery Equipment

HEAT EXCHANGERS
(Liquid to Liquid)
VAPOR HEAT EXCHANGERS
FINAL CONDENSERS
VACUUM CONDENSERS
PARTIAL CONDENSERS
THERMO COMPRESSORS

Other Products Include:

Cooling Towers,
Surface Condensers,
Jet Condensers,
Steam Jet Air Pumps,
Expansion Joints,
Heaters,
Evaporators,
Centrifugal Pumps,
Brass and Copper Tube and Pipe

LOCAL OFFICES:

Birmingham	New Orleans
Boston	Philadelphia
Chicago	Phoenix
Cincinnati	Pittsburgh
Cleveland	Portland, Ore.
Dallas	Salt Lake City
Denver	Seattle
Havana	San Francisco
Kansas City, Mo.	Vancouver
Los Angeles	

THE best lubricating oils are produced by vacuum distillation. It is possible to operate the stills at a lower temperature, below the cracking point of the oil. Less steam need be used in the still to prevent overheating.

The Wheeler Condenser and Engineering Co. manufactures heat exchangers, oil condensers and vacuum pumps for vacuum distillation. The Wheeler Steam Jet Thermo Compressor is an economical self-contained vacuum pump. It has no moving parts, is light in weight and requires no special foundation. For further information write the

WHEELER
CONDENSER & ENGINEERING CO.
Works, **CARTERET, N.J.**
and NEWBURGH, N.Y.
Main Office—149 Broadway, New York City

96

Special Naphthas With Pipe Still

Excellent Yields Secured From Bubble Towers in Unique Installation of Medway Company at Grain, England

By Fred C. Koch
Winkler-Koch, Wichita, Kans.

In the past the production of special naphthas of narrow boiling range has been a formidable task to the refiner. With inefficient fractionating equipment an almost endless amount of re-running was required, resulting in high fuel costs and a small production per day from a given piece of equipment.

The production of special naphthas from shell stills and bubble towers is not uncommon today but it is rather unusual to make them from a bubble tower pipe still layout. In 1924 the Medway Oil & Storage Co., Ltd., an English concern, backed by American capital, was building a refinery at Grain, England, at the junction of the rivers Thames and Medway, to handle Russian kerosene brought by tanker from Batoum, on the Black Sea..

It was originally intended to crack this kerosene into gasoline or petrol with the Cross process. As the kerosene contained considerable material which boiled below 375 degrees Fahrenheit, the conventional endpoint of nearly all petrol used in England, it was thought desirable to top this material out and blend it with a lighter material to make the petrol direct. Since there was a considerable demand for "White Spirit", or turpentine substitute, the specifications of which were an initial boiling point of about 300 degrees Fahrenheit, and endpoint of about 375 degrees Fahrenheit, water white color and sweet odor, it was desired to make this material in the same operation.

Since the plant was being built completely new, without the necessity of using old existing equipment, it was decided to use pipe stills throughout instead of the customary cumbersome, inefficient and expensive shell stills.

As the plant was to be located near the sea the soil was very soft and marshy. The bearing value of the soil was taken at about 250 pounds per square foot, or practically nothing. This made it necessary to carry almost every piece of equipment of any weight on piles, which made the foundation problems very difficult, as well as expensive, and had no inconsiderable part in the design of the equipment.

Plant Layout.

Several different layouts were considered but the one which was finally settled upon is shown in the flow sheet, Figure No. 1. An examination of this flow sheet revealed that the crude kerosene charging stock was split into two streams, one of which exchanged with the residual gas oil bottoms and the other with the vapors from No. 2 bubble tower. These two hot kerosene streams then combined and were charged into the first bubble tower where they flowed down over the decks and were stripped of their heavy naphtha content. The hot oil was then back trapped into one side of the first compartment drum which acted as a reservoir.

This material was then charged by means of hot oil pumps through the No. 1 pipe still and into the other compartment of this same drum where vaporization took place. The vapors entered the base of the column and the heavy naphtha vapors were taken overhead and condensed. A portion of this condensate was pumped from the reflux drum back onto the top deck of the bubble tower to furnish the necessary cooling.

This tower was operated under about 20 pounds pressure, the presure being controlled by means of the valve on the run down line from the reflux drum.

The kerosene with the heavy naphtha fraction removed was then charged into the No. 2 bubble tower where the "White Spirit" cut was removed. The arrangement on the back trap drum and pipe still on this second tower was identical with those on the first tower. The "White Spirit" vapors were sent through a vapor heat exchanger before entering the condenser and reflux drum. After operating the installation it was found that it was advisable to carry the pressure on the No. 2 bubble tower at about 5 lbs. lower than on No. 1. The residual gas oil fraction was drawn out of the compartment drum through the bottoms heat exhangers and sent to storage. This gas oil was subsequently cracked in the Cross Units.

Type of Pipe Stills

The pipe stills used were two conventional Foster heaters. They were connected to an induced draft fan which discharged the waste flue gases up a small, short stack. The induced draft arrangement was used in order to avoid building a very high stack for natural draft which would have entailed a very large foundation and a considerable number of piles. Some trouble was experienced with these pipe still foundations cracking due largely to the concrete under the combustion chamber becoming too hot.

The back trap drums or reservoirs, which were the fly-wheels in the system, were supported on small concrete piers, and the bubble towers were swung from structural steel supports which were bricked around as a matter of fire protection.

In order to reduce the size of the condenser box as much as possible corrugated cast iron pipes were used, which had a very large number of square feet of cooling surface per foot of length.

The heat exchangers were built by placing a large number of 1-inch pipe inside 12-inch pipe. The 1-inch pipes were connected by screwed close return bends, and were kept apart by means of specifically devised spacers. This particular size of pipe was arrived at by calculating the cost per square foot of heating surface when using ½-inch, ¾-inch, 1-inch, 1½-inch and 2-inch pipe inside 10-inch, 12-inch, 16-inch and 18-inch pipe. It was found that the 1-inch pipe inside the 12-inch proved the cheaper, from the point of view of cost per square foot of heating surface and also gave better velocities for the oil inside and outside the one-inch pipes.

The receiver house was built directly on the ground and contained the pumps, reflux drums, and the instrument board. It was arranged very similar to that of the conventional cracking process. It was not desired to build the receiver house high enough in the air to gravitate into the rundown tanks since this would have entailed a much larger weight on the foundation. The towers were operated under pressure in order to eliminate this feature and also to avoid the necessity of pumping either of the two streams or the bottoms into the rundown tanks. All the pumps and control instruments were centralized in one place so that the operators would not be compelled to walk very far in order to alter any operating condition in the plant. Standby pumps were provided for the reflux pumps as well as the hot oil pumps.

The instrument board contained recording pyrometers and pressure gauges which furnished a complete record of the principal temperatures and pressures throughout the system. The less important temperatures were read from a multiple point indicating pyrometer.

Results from Operation

The plant now handles about 1,700 bbls. per day of kerosene. Due to the very efficient management of this plant, careful records in the form of weekly reports are available covering the operation for the past three years. The results are remarkably consistent.

Below are given the distillation tests of the charging stock and various products together with the yields obtained. These results are the average on a week's operation and are representative of the results which are being continuously obtained.

Yield		20.2%	19.9%	59.8%
	Charging Stock 41.0 Be'	Heavy Naphtha 50.9 Be'	White Spirit 44.7 Be'	Gas Oil Bottom 37.4Be
1	273	241	311	397
10	304	251	316	412
20	332	258	321	424
30	358	264	324	436
40	380	270	328	443
50	401	273	329	451
60	424	279	330	461
70	448	284	332	476
80	478	295	338	500
90	523	303	347	539
EP	621	327	364	628
Rec	98.5%	98.0%	98.0%	99.0%

It will be noted that 20.2 per cent of the heavy naphtha cut was obtained whereas only 18 per cent of that endpoint was indicated on the distillation curve of the charge. For the intermediate out of "White Spirit" the yield indicated was practically the same as was actually obtained. This should be of interest to anyone who is estimating the yields of close-cut special products which can be obtained by efficient fractionation from a similar stock.

The fuel consumption of 2.3 per cent by volume is much better than could be obtained from shell stills although it could be reduced materially by the use of air heaters and a recirculating system on the pipe stills. With this installation it is possible to "gap" the two streams but there is no occasion in doing so since any endpoint under 375 degrees Fahrenheit is permissible for the first stream and any I. B. P. around 300 degrees Fahrenheit is suitable for the second stream.

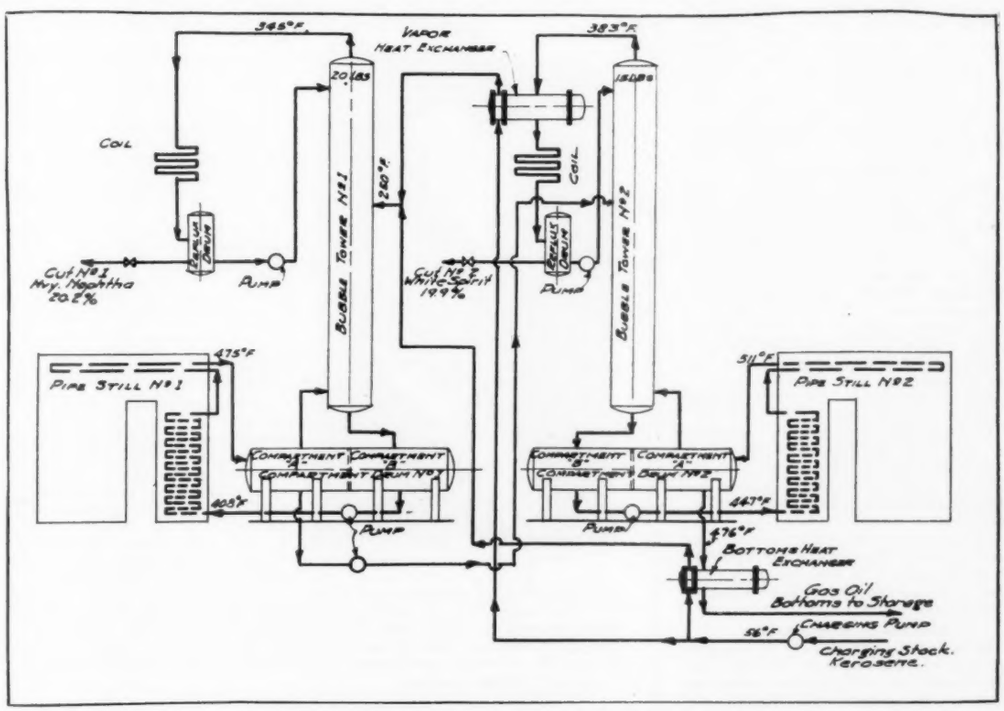


Figure 1—Flow chart of pipe still and bubble towers at Grain, England, refinery of the Medway Oil & Storage Co. Ltd.

Bureau of Mines Studies Treating

Bartlesville Station in Experimental Plant Conducting Investigations Relative to All Phases of Problem

By Neil Williams

What is expected to be of special benefit to the refining industry of the country is the work being done at the petroleum experiment station at Bartlesville, Okla., by the United States Bureau of Mines along the lines of treating petroleum products. Although detailed results of what has been learned are not available yet, what the staff is doing and how is interesting.

Chemical treatment of petroleum products always has been one of the most vital problems faced by the industry and one which has been the object of constant study and experimentation. Yet today, after years of operation with various methods, the industry has more phases of the problem to work out than ever before. In fact, the field now open for research is not how to treat but rather how to refine with as little treating as possible.

There have been many factors entering treating in the past. Early day refiners, especially in the eastern oil fields, worked out methods which at that time proved satisfactory, but as the industry moved westward new crudes of varying grades and characteristics were encountered whose products necessitated different processes of handling. Even today the industry has its Panhandle and West Texas crudes which offer difficulties not before met and which have not yet been overcome.

Changing standards of what constitute the most valuable elements in petroleum products, particularly gasolines, also have influenced treating. Until recent years the unsaturated hydrocarbons were considered objectionable elements in gasolines, and as no efforts were made to retain these, a "doctor sweet" product meeting corrosion tests could be finished by the free use of chemicals and washes.

Recent investigations have shown that the presence of unsaturated hydrocarbons has a direct relationship to the antiknock properties of gasoline and efforts now are made to retain as high a percentage of unsaturates as possible in the gasoline. This offers an entirely new problem in treating as it is known that certain chemicals tend to lower the percentage of unsaturates. When running certain crudes refiners often are forced to place on the market a product which is not doctor sweet, many of them preferring a sour product rather than one low in unsaturates.

Important In Cracking

The development of cracking, more than any other phase of refining, has made necessary a greater study of treating. The products of high pressure distillation are very rich in unsaturates, and, yet they possess more of some objectionable elements than made in skimming operations. This has presented a more serious treating problem because while attempting to eliminate the undesired characteristics, refiners are trying to retain a high percentage of unsaturates, the quality for which cracked gasolines are most valuable.

It is along this line that two members of the staff of the Bureau of Mines station at Bartlesville, H. P. Rue, associate refining engineer, and R. H. Espach, assistant refining engineer, are working. The investigation also is being made with a view toward minimizing treating and treating costs. The latter is an important item to refiners as treating equipment and chemicals require a large expenditure by the industry.

Relation to Fractionation

In conducting experiments to minimize treating and treating costs, Mr. Rue and Mr. Espach are acting on the theory that most of the objectionable elements are embodied in certain fractions and that by proper distillation methods and fractionation these fractions can be segregated and treated alone without the necessity of treating fractions which do not contain the objectionable elements. Their study so far is confined to the lighter ends, gasolines and kerosenes, with attention being paid to the effect of the tests on gas oil cuts.

Mr. Rue is using a small but complete distillation unit set up at the Marland Refining Co. refinery at Ponca City, Okla. Samples of many typical cuts and fractions of the charging stock are drawn from the apparatus in these tests. The samples are taken to the laboratories at the Bartlesville station where they are analyzed and studied with a view toward determining in which fractions the undesired elements are found, and treating necessary for the various cuts and the effects of reuniting the fractions to obtain specification products.

It is Mr. Rue's belief that in general the lighter fractions of any particular product contains less of the objectionable elements. In other words, nearly all the properties which need to be treated are in the heavier ends and any desired qualities in the lighter fractions need not be affected. Thus, by correct fractionation, treating can be minimized by being applied only to those heavier fractions which need it and these later can be blended back with the untreated lighter fractions to produce the required products.

By this principle, not only the amount of treating would be limited to a comparatively few fractions but also by not subjecting all fractions to the acid action there would be a tendency for the finished products to possess higher percentages of unsaturates.

Experimental Plant

At present, Mr. Rue is experimenting with the pressure distillate from two types of cracking units. The pressure distillate is run through the fractionating equipment and cut into fractions. The fractionating unit consists of a small pipe still, evaporator and residuum cooler, a bubble type fractionating tower, coolers for the tower bottoms and kerosene, vapor condenser and reflux and other pertinent equipment. It has a maximum capacity of 50 bbls. daily but for experimentation purposes only from 26 to 28 gallons of pressure distillate are charged hourly.

The pipe still and furnace are of the conventional type built of common red brick and lined with fire brick. It is of miniature size and originally provided for 75 square feet of heating surface on 1-inch coils. These tubes recently have been replaced with one-half inch tubes, providing a somewhat greater heating surface and giving the oil a greater velocity through the furnace. The still is fired with gas through three bunsen type burners.

The evaporator is made of an 8-foot length of 12½-inch casing packed with a roll of light expanded metal lath in the bottom half and on the top of it a roll of ordinary netting wire. The heated oil from the pipe enters the evaporator at a point below its center, the vapors coming off the top through a 2-inch line and the residuum being drawn off the bottom to a cooler. A small chamber with a gauge glass attached, is used in determining the liquid level in the evaporator. The residuum is cooled by passing through four cast iron Sterling oil condensing sections, water cooled and then is pumped to storage or recirculated through the furnace.

Bubble Tower

The bubble tower as built originally was designed to serve both as an evaporator and a fractionating device. Thus the lower section is of four sections of 12½-inch casing and the upper of 11 sections of 8¼-inch casing. Both sections now are used as a fractionating column. There are 10 bubble plates in the upper section, and three in the lower. Each of the 10 plates holds 6 small bubble caps and a liquid downflow pipe. Each of the remaining three plates holds two bubble caps and a downflow pipe.

Seven of the sections in the upper part of the tower have been tapped so as to provide for liquid draw-offs at different levels, and for thermometer wells. It is by these taps and by various temperature regulations that it is possible to cut out most any fraction desired. The lighter vapors are taken off the top of the tower and run directly to the condensers. Streams from the liquid draw-offs usually are termed heavy naphtha or kerosene while the residuum taken from the bottom of the tower is gas oil.

In each section of the tower a piece of wire mesh is placed above the bubble caps. This mesh supports two layers of surface rings of the Lessing type. It is thought that these add to the efficiency of the tower. In the top of the tower between the first and second tray is a knockback cooling or reflux coil of a circular pancake type, consisting of one-qurter inch copper tubing 20 feet in length and having a cooling surface of 1 square foot.

The cooling medium used through this coil is the cooled gas oil pumped from a small storage tank, circulated through the coil and then back to storage. Regulators and temperature control determine the amount of cold gas oil circulated and consequently the temperature in the top of the tower, enabling a further separation of fractions passing off the top.

Method Of Refluxing

The coil is one of two methods of refluxing by which the tower can be operated. In addition, a perforated pipe is installed above the first tray and can be used as a spray when operating with a direct reflux. When the spray is operated the same fraction as that being taken off the top of the tower is used as a reflux and cooling medium. This is possible by pumping liquid from the same tank into which the condensed and cooled fraction from the top of the tower passes. Many towers in regular refinery operations use the spray system of reflux but in some cases cold crude or other cold charging stock is used. It is Mr. Rue's contention, however, that the most efficient results can be obtained only by spraying the same fraction as is being taken off the top of the tower. The spray and the coil are operated separately and give a very close temperature control at the top of the tower. A small chamber with a gauge glass attached is connected to the bottom of the tower and

(Continued on Page 139)

Salesmen Will Be More Concerned With Prices If They Know Costs

By F. W. Burford

Vice President, Crystal Oil Corporation, Shreveport, La.

If the sales managers of refining organizations could be kept advised as to the true costs of refined products, that they would be better equipped to successfully market the large volume of finished products for which they are held responsible for selling. The practice of any oil concern, regardless of size, to permit the selling of refined products below the cost of manufacture even for a short period over the year is not only a poor business policy but is indicative of bad organization.

If the executives responsible for the general management of the companies will give their sales managers sympathetic co-operation to the extent of keeping them advised as to manufacturing costs and problems, the sales managers will have a better incentive to ask and obtain satisfactory prices for refined products. Any human being is reluctant to sell goods for less than cost.

Sales managers in the oil fraternity generally are energetic salesmen and if their senior officers will take them into closer confidence it seems that better results can be obtained.

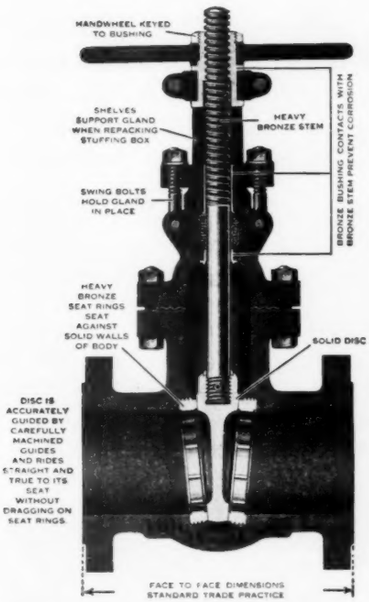
It isn't a question of endeavoring to maintain a fictitious price contrary to the law of supply and demand; it is a matter of keeping the tank car prices of refined products on a basis above their costs, constantly and without deviation during all seasons of the year.

The income from a refining company is placed in the hands of the sales department which makes its importance paramount. When selling prices seek the level of manufacturing costs, it seems logical for the industry to do one of three things—cease selling, curtail manufacturing, or enter on a storage program.

LUNKENHEIMER
IRON BODY BRONZE MOUNTED
GATE VALVES

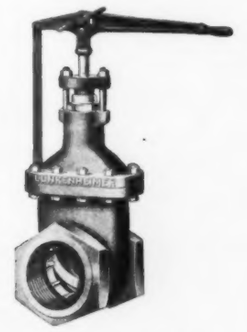
Rising Stem, Outside Screw. Flanged Bonnet and Yoke
Screw or Flange Ends

Standard	125 lb. W.S.P.
Heavy	175 lb. W.S.P.
Extra Heavy	250 lb. W.S.P.


HANDWHEEL KEYED TO BUSHING
SHELVES SUPPORT GLAND WHEN REPACKING STUFFING BOX
HEAVY BRONZE STEM
SWING BOLTS HOLD GLAND IN PLACE
BRONZE BUSHING CONTACTS WITH BRONZE STEM PREVENT CORROSION
HEAVY BRONZE SEAT RINGS SEAT AGAINST SOLID WALLS OF BODY
SOLID DISC
DISC IS ACCURATELY GUIDED BY CAREFULLY MACHINED GUIDES AND RIDES STRAIGHT AND TRUE TO ITS SEAT WITHOUT DRAGGING ON SEAT RINGS
FACE TO FACE DIMENSIONS STANDARD TRADE PRACTICE

Stationary Stem, Inside Screw
Flanged Bonnet
Screw or Flange Ends

Standard	125 lb. W.S.P.
Heavy	175 lb. W.S.P.
Extra Heavy	250 lb. W.S.P.



Quick Operating Gate Valve.
Sliding Stem. Flanged Bonnet.
Screw or Flange Ends.

2 to 3 in.	125 lb.
3½, 4, 5 and 6 in.	100 lb.
8 in.	75 lb.
10 and 12 in.	50 lb.

Lunkenheimer Iron Body Bronze Mounted Gate Valves are important factors in reducing operating costs. The accurately guided disc closes tight, thus preventing wasteful leakage; the combination of correct design, carefully selected materials, and skilled workmanship provides continuous satisfactory service over long periods of time with extremely low maintenance expense.

All-Iron Patterns are procurable for handling solutions which attack bronze but not iron.

Lunkenheimer Distributors, located in all oil-producing centers, carry complete stocks and render prompt service. Call on them for your requirements.

THE LUNKENHEIMER CO.
"QUALITY"
CINCINNATI, OHIO, U.S.A.
NEW YORK CHICAGO BOSTON PITTSBURGH
SAN FRANCISCO NEW ORLEANS
LONDON
EXPORT DEPT. 129-135 LAFAYETTE ST., NEW YORK

The complete line is illustrated and described in Gate Valve Book No. 511. A copy will be sent upon request, without obligation. JUST FILL IN AND MAIL COUPON.

THE LUNKENHEIMER CO.
"QUALITY"
P. O. Box 876 Cincinnati, Ohio

Gentlemen—Send me without obligation, copy of Gate Valve Book No. 511. JA.

Name _____
Firm _____
Position _____
Address _____

6-18-21

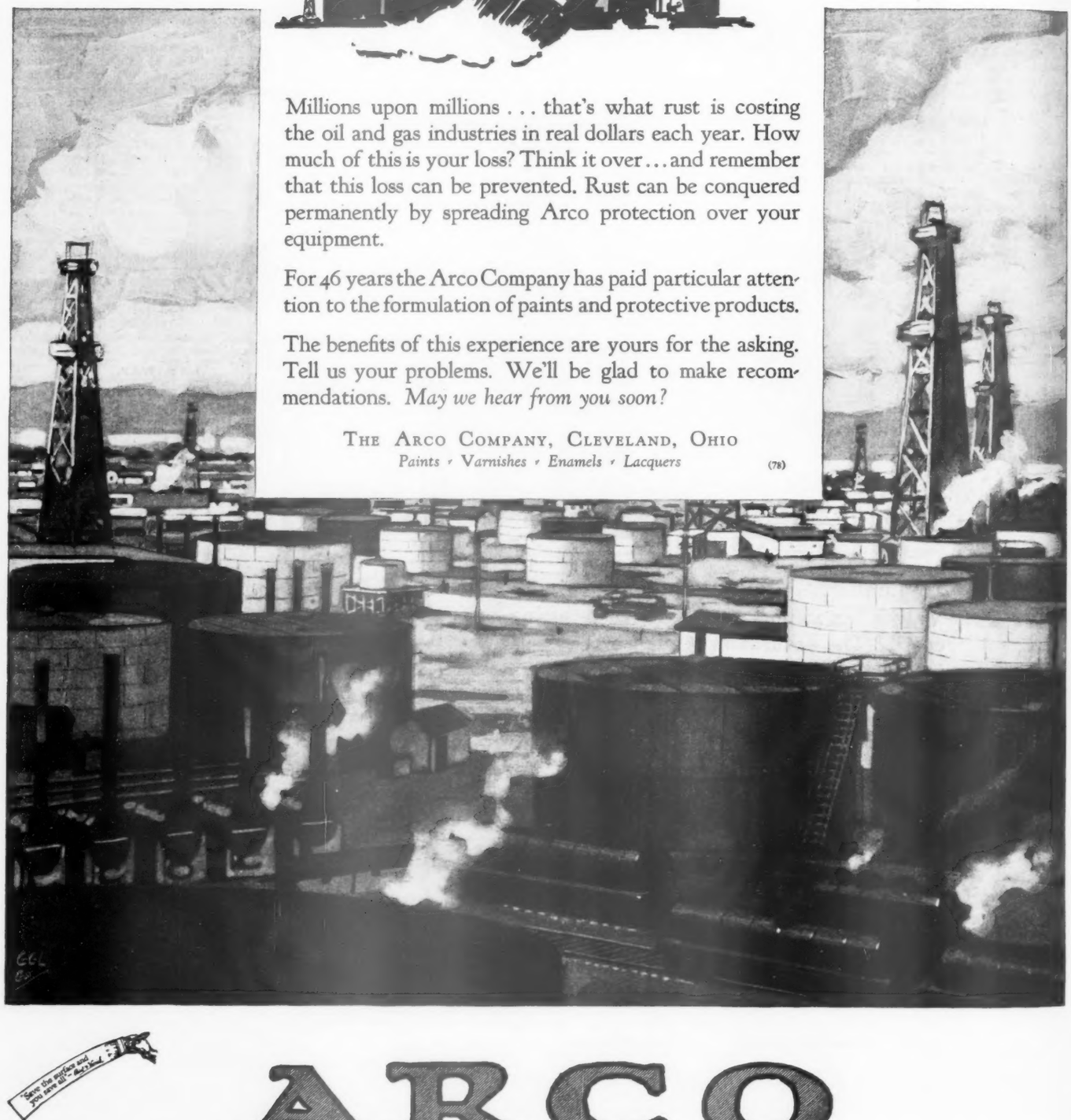
By Protecting the Surface *You Protect all*

Millions upon millions . . . that's what rust is costing the oil and gas industries in real dollars each year. How much of this is your loss? Think it over . . . and remember that this loss can be prevented. Rust can be conquered permanently by spreading Arco protection over your equipment.

For 46 years the Arco Company has paid particular attention to the formulation of paints and protective products.

The benefits of this experience are yours for the asking. Tell us your problems. We'll be glad to make recommendations. *May we hear from you soon?*

THE ARCO COMPANY, CLEVELAND, OHIO
Paints • Varnishes • Enamels • Lacquers (78)



ARCO
PAINTS VARNISHES ENAMELS LACQUERS

BUREAU OF MINES STUDIES TREATING

(Continued From Page 136)

serves to indicate the oil level in the tower.

The bottoms from the bubble tower are picked up by a small motor driven rotary pump and discharged either with the raw charging stock into the furnace or through a one-half-inch copper tube coil of 13 square feet of cooling surface, water cooled, into a stock tank from which it is pumped to storage. Most of the trays in the upper section of the fractionating column are equipped with pipe nipples for drawing off the liquid, as previously mentioned, and five of these are hooked up to take the liquid from any one or all of these trays to a cooler.

The cooler is made of 70 feet of three-eighth-inch copper tubing, having 7 square feet of surface, formed into a coil and water cooled. The liquid is dropped into a stock tank and is pumped to storage.

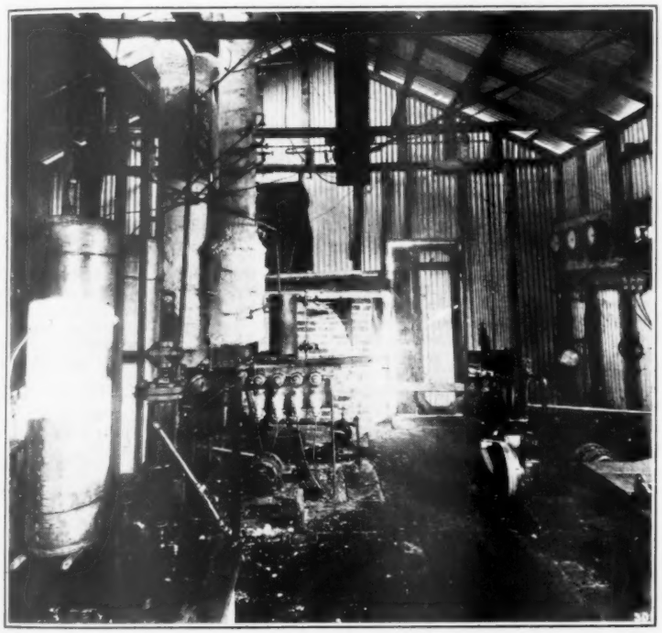
Water Condenser

The vapors from the top of the tower go through a 2-inch vapor line to a water cooled condenser made of five Sterling oil condensing sections with a total of 70 square feet of cooling surface. The condensate flows to a stock tank and is pumped to storage. A meter, however, is installed in the line and the liquid can be picked up by a reflux pump and discharge through a meter into the top of the tower where it is sprayed as a direct reflux medium.

The same pump and meter also are a part of a closed gas oil circulating system. The bottoms run from the bottom of the tower into the storage tank are picked up by this pump and circulated through the pancake coil in the top of the tower and then back to the storage as previously explained. In either the open spray or the closed coil method of reflux the amount of reflux is controlled automatically by a mercury thermometer in the vapor outlet from the tower, fluctuations in which actuate a regulator valve in the discharge line of the reflux pump.

A small reciprocating duplex steam pump is used to charge the furnace. All transfer, reflux and circulating pumps are of the motor driven gear type. All temperatures are measured by thermometers and automatic temperature recording devices. A vacuum and pressure guage indicates pressure conditions in the tower.

Results of the experiments being conducted under Mr. Rue's direction are being studied and recorded carefully and later, after being reported to the Washington office of the United States Bureau of Mines, will be made known to the refining industry. Several individual refiners are known to have made experiments along these same lines but through the work of the Bureau of Mines at Bartlesville detailed facts are expected to be determined which may revolutionize ideas of treating petroleum products.



View of Bureau of Mines experimental fractionation unit at Marland Refining Co. plant, Ponca City, Okla. At the rear are the evaporator (left) and bubble tower. In the left foreground are condensers. The pumps and temperature pressure controls also are shown.

DEVELOPMENTS IN PETROLEUM REFINING

(Continued From Page 99)

stills, lines, towers, connections, valves, condensers and refinery equipment in general through the action of corrosive substances, always present in a crude to a greater or less extent, that broad investigations have been made by the refiners. The chemical composition and physical properties of the metals used has much to do with the length of service that may be expected. The crude produced in many sections does not contain large quantities of impurities, but it is now recognized that under the continuous system of running, that these impurities and their decomposition, become concentrated in the distilling system.

Many refiners were inclined to dismiss corrosion troubles with their particular crudes as very remote possibilities, but through scientific investigations quite small quantities of sulphur and salts have been found active agents of extensive corrosion. The presence of alkaline compounds in the water frequently accompanying crude oil finds its way into the residual oil. The burning of certain crude oils and fuel oils containing alkalies, under the stills, and especially in the large pipe stills, is presenting a problem because of the destructive action on the brick work and the formation of incrustations on the metal parts exposed to direct flame.

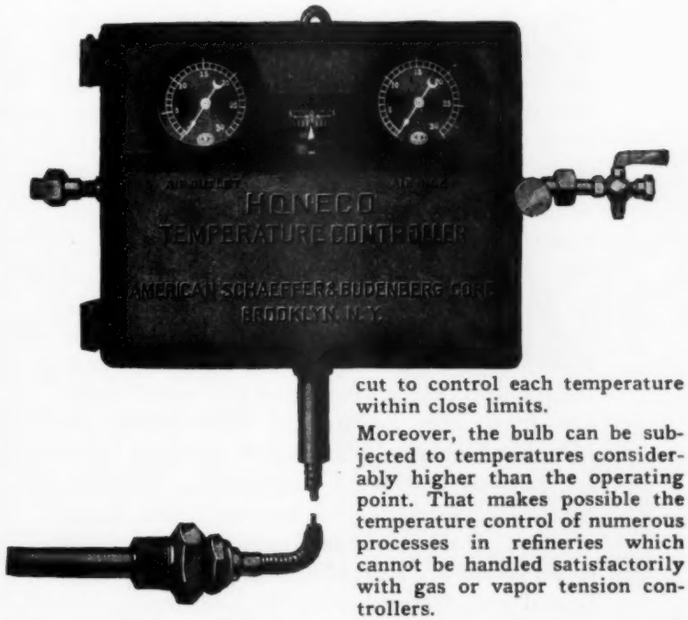
More attention is being paid to the kind of material to be used with all varieties of oil that are being refined. Special steel, particularly the kind containing large quantities of chromimum and nickel, is finding wide application. Modified bronzes have demonstrated their value for a variety of conditions. The increased value of equipment, especially

Now—

one controller works under dozens of conditions

No longer is it necessary to have a different Controller for each condition in your plant. The American (formerly Honeco) *Mercury* Actuated Controller is adapted for temperatures anywhere between —40° and 900° F.

Where continuous distillations of crude are made and successive cuts are taken at various temperatures from comparatively low to very high temperatures. This ONE Controller can be reset for each



cut to control each temperature within close limits.

Moreover, the bulb can be subjected to temperatures considerably higher than the operating point. That makes possible the temperature control of numerous processes in refineries which cannot be handled satisfactorily with gas or vapor tension controllers.

This controller may be had with long or short range for operation at any point within its range. Its sensitivity is the same at any point of the range.

Write for Booklet No. 5-2500.

AMERICAN SCHAEFFER & BUDENBERG CORP.
338 Berry St., Brooklyn, N. Y.

Atlanta	Cleveland	Minneapolis	San Francisco
*Boston	Detroit	Philadelphia	*Seattle
Buffalo	Houston	*Pittsburgh	St. Louis
*Chicago	*Los Angeles	Salt Lake City	Tulsa

*Stock carried at these branches.

AMERICAN
Mercury Actuated
Temperature Controller

What Happens?

When Your Machinery Starts and Stops

Much of the wear and tear on machinery comes from starting and stopping. For then the fluid film of lubrication is broken, *and unless you are using the right lubricant,* friction takes a heavy toll.

As long as the fluid film is intact, the quality of the lubricant is not so important—but when the fluid film breaks, as it does every time you start and stop a machine—the quality of the lubricant supplied to the bearings is of prime importance, if friction is to be kept from doing serious damage.

After exhaustive tests, scientists in our laboratories developed Humble Oils, which retain the proper viscosity and hold their fluid film at the operating temperatures produced by high speeds. And, in addition, Humble Oils have that all-important quality—the ability to leave a semi-plastic, adsorbed, protective film on the surface of the metal, after the fluid film is broken. This quality in Humble Oils prevents excess abrasion during periods of partial lubrication, which is specially important with bearings, like those of line shafts, countershafts and machine tools, which are started and stopped frequently and are often subjected to peak loads.

Reg. U. S. HUMBLE OIL & REFINING CO. HUMBLE OILS HOUSTON, TEXAS Pat. Off.

There is a Humble Oil which is specially prepared to meet every bearing need in your plant, your trucks or your automobile.

Humble Oil & Refining Co.
HOUSTON, TEXAS
Producers - Pipe Lines - Refiners - Marketers

the large and complicated pipe still, has made corrosion control probably the most important problem before refiners.

Another method of corrosion control which has shown some progress, appears in the closer regulation of the treating process, together with modifications of the oil before and while it is being run through the stills. The introduction of ammonia and other alkaline substances into the still and condensing systems has been demonstrated to have value in preventing rapid corrosion, and in addition, so modifies the product that a saving in the actual treating process is accomplished. It has been reported from several sources that some success has been met with in preliminary washings and treating of the crude oil for the removal of corrosive substances. Separation on the basis of low endpoint tends to reduce treating difficulties.

There has been a constantly increasing quantity of lubricating oil manufactured. This has been explained as being due to the trend on the part of the refiners to do their own manufacture of lubricating stocks and to make their own blends. What has been said about the improved quality of gasoline is equally true of the quality of the lubricating oil which has been marketed. Close attention has been paid to quality by both refiner and consumer. Improved methods of refining have been introduced into the refineries, which have included separation of the lubricating fraction, application of contact filtering methods, greater clay recoveries and more uniform blending.

There has been great progress in the elimination of waste through the application of heat economizers, including the circulation of hot gases, the introduction of systems for the burning of heavy residues, acid sludge recovery plants, and apparatus for the recovery of gasoline from refinery gas. The market for petroleum coke has been improved and much interest has been manifested in the conversation of the braize by means of the briquetting process.

Antiknock Gasolines

Much progress has been made in the development and the application of the knowledge of antiknock values of gasoline. The tendency of a gasoline to detonate or knock, with the consequent harm to the motor and incomplete utilization of the fuel, was early recognized as a property peculiar to the product obtained direct from the crude. Some petroleums possessed this property to a more marked degree than some others. The first remedy consisted in the addition of a chemical compound to the gasoline, then later it was found that most oils when run through the pressure still, produced substances which to some extent neutralized the detonating property. It has been shown that more nondetonating or antiknock products are formed from some oils than others. We have found that the knocking property involves chemical composition of the gasoline and that the tendency to knock may be modified by the addition of certain substances. Some nitrogen and sulphur compounds aid in producing the knock, as do specific hydrocarbons. The desirable antiknock compounds are to some extent removed by the ordinary treating process. Future studies will indicate methods whereby it will be possible to save these substances and consequently add to the efficiency of the gasoline together with more complete utilization. The discarding of the color specification is helping in this respect. It is possible that too much stress is laid upon the action of sulphur, especially when it is recognized that the builders of the internal combustion engine are making proper use of metals which will better withstand the conditions that may develop.

Considerable attention has been devoted to research work in an effort to account for detonation. The ideas proposed include: The knock is due to the lack of complete dispersion of the flame; emission of radiant energy; ionization; generation of heat through compression; rapid burning of "heavy ends" or unvaporized liquid.

Legislation

The industry as a whole continues to be embarrassed by legislative bodies attempting to formulate some system of control, and to add to the tax burden. Nothing conclusive has been done toward clearing this troublesome condition. The refining branch of the industry has been interested in the patent situation which involves so many different phases of the business. Pressure stilling has received particular attention through action by the Government in bringing to a hearing the suit involving a number of well known processes. It remains to be decided whether or not many of these are true inventions. The establishment of true ownership of these processes is exceedingly important as affecting the application and perfection of the art and science of cracking. Any method which makes possible the production of increased quantities of gasoline, together with improved qualities, is worthy of the extensive use which would be warranted if there were a more satisfactory legal status.

The search for a motor fuel which may serve in the place of gasoline is progressing, with some splendid work being reported from Europe on what has been accomplished with coal. The most encouraging of these processes appear to include low temperature carbonization and the hydrogenation of coal. None of the methods has been put into operation on a large scale but several may reach commercial proportions within the year. Cheap production of alcohol has had little influence on the use of gasoline beyond being used as a part of the fuel in some countries.

CRACKING FACILITIES FEATURE OPERATIONS

(Continued from Page 101)

small plants which have never installed cracking equipment. These plants are operated primarily to secure lubricating oils and in the opinion of their owners they would not be justified—due to the small amount of charging stock available,—in making the necessary expenditure for cracking stills.

In the Mid-Continent Field where lubricating oil manufacture is of minor importance due to the character of the crude, there are also quite a number of small plants without cracking units. As shown in the detailed data given by states, these are usually small skimming plants which prefer to sell their gas oil charging stock to other refiners rather than add to their investment by installing their own cracking equipment.

In California, largely the same situation is found among the smaller plants. The most important drawback, however, to cracking expansion in California has been due to character of the cracking stock. Most California crudes, due to the presence of certain sulphur compounds, present mechanical difficulties in cracking and the finished products are also difficult to treat without large losses.

This situation deterred the larger companies for several years. Exhaustive experimental work is solving the problem and a continued rapid expansion on the west coast in cracking equipment is to be expected. The cracking capacity on the west coast as shown in Table 2 is

LARGEST REFINERY IN WORLD GULF CO. PORT ARTHUR PLANT

The Port Arthur, Tex., Works, of the Gulf Refinery Co. constitute the largest single refinery in the United States and the entire world. The refinery now has a rated capacity of 125,000 bbls. daily with large cracking facilities.

The three New Jersey plants of the Standard Oil Co. are larger but these plants are operated separately and are so listed by the company. The closest competitors of the Gulf refinery are the two 100,000-bbl. refineries of the Standard Oil Co. of California located at El Segundo and Richmond, Calif.

EDWARD FORGED STEEL VALVES

No. 866—*600-lb. W. S. P. Standard (also conforms to 400-lb. W. S. P. Standard) Flanged End, Flanged Bonnet, O. S. & Y. Globe Valve. Size ¼" to 1½" inclusive.*

—it will pay you to standardize on them for refinery service

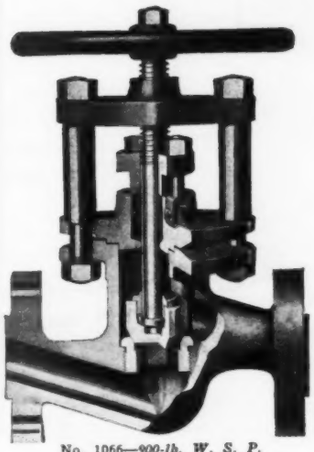
First—Because the functions of valves in various refining processes are so closely associated with results obtained and operating costs that the matter of valve selection is of vital importance.

Second—Because Edward *Forged Steel* Valves have been for over 14 years the standardized product for this specialized service.

Third—Designed and built in a range of sizes and styles for service from 400 lb. to 900 lb. W. S. P. and with intermittent temperatures to 1100° F.

Fourth—Because of the quantity production these high grade valves (in usual sizes) are priced *low enough* to justify their use throughout and even at points far below their maximum rating.

Fifth—That standardization effects general economy in service, maintenance, buying and stock.



No. 1066—*900-lb. W. S. P. Standard, Flanged End, Flanged Bonnet Globe Valve. Usual sizes, 1", 1½", 2" (other sizes upon order)*

No. 876—*600-lb. W. S. P. Standard Flanged End, Union Bonnet, O. S. & Y. Globe Valve. Usual sizes 1", 1¼", 2" (other sizes upon order)*

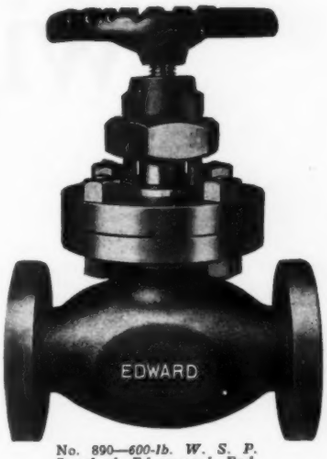
Prompt Shipment

When using Edward *Forged Steel* Valves you are assured of immediate shipping service. Large stocks carried at factory and central points in the oil field.

THE EDWARD VALVE & MANUFACTURING CO.

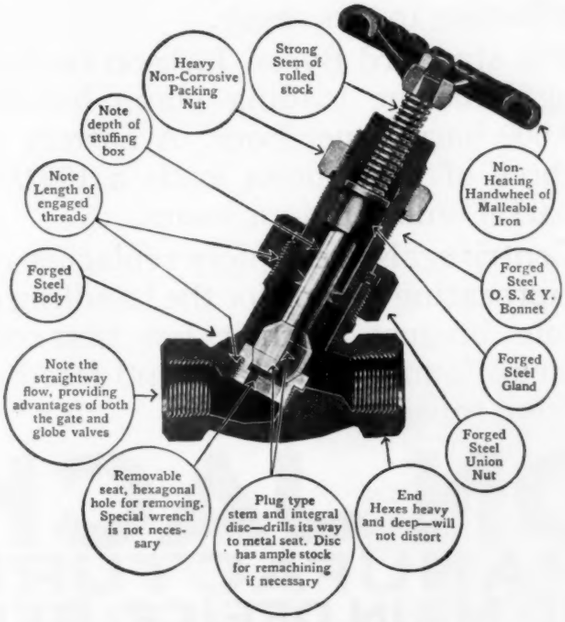
Main Office & Works—EAST CHICAGO, IND.

Maintenance Engr. Corp., 1802 Conte St., Houston, Texas
Chapman Valve Mfg. Co., P. O. Box 974, Tulsa, Oklahoma



No. 890—*600-lb. W. S. P. Standard Flanged End, Flanged Bonnet, O. S. & Y. Globe Valve. Usual sizes 1", 1½", 2" (other sizes upon order)*

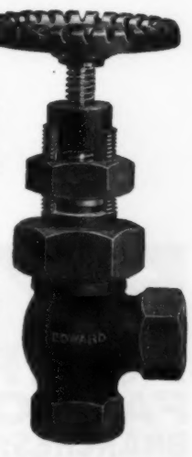
No. 660—*400-lb. W. S. P. Standard (with a maximum to 500 lbs. W. S. P.) Screwed End, Flanged Bonnet, O. S. & Y. Globe Valve. (Also built in Angle pattern). Sizes ¼" to 2" inclusive.*

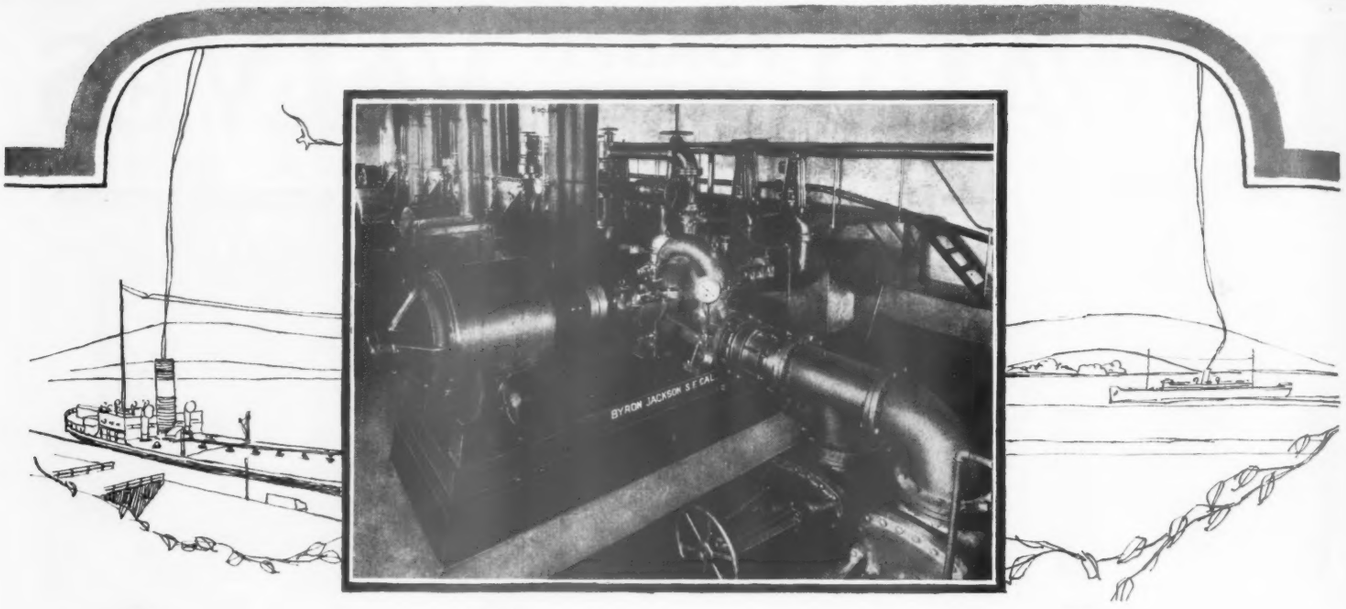

Heavy Non-Corrosive Packing Nut
Strong Stem of rolled stock
Note depth of stuffing box
Note Length of engaged threads
Non-Heating Handwheel of Malleable Iron
Forged Steel Body
Forged Steel O. S. & Y. Bonnet
Forged Steel Gland
Note the straightway flow, providing advantages of both the gate and globe valves
Forged Steel Union Nut
Removable seat, hexagonal hole for removing. Special wrench is not necessary
Plug type stem and integral disc—drills its way to metal seat. Disc has ample stock for remachining if necessary
End Hexes heavy and deep—will not distort

No. 682—*400-lb. W. S. P. Standard (with a maximum to 500 lbs. W. S. P.) Screwed End, Union Bonnet, Globe Valve Sizes ¼" to 2" inclusive.*

No. 681—*400-lb. W. S. P. Standard (with a maximum to 500 lbs. W. S. P.) Screwed End, Union Bonnet, Angle Valve. Sizes ¼" to 2" inclusive.*

No. 1080 Series—*900-lb. W. S. P. Standard same style as Nos. 682 and 681, and built in both Angle and Globe pattern. Sizes ¼" to 1½" inclusive.*





8,000 barrels *per hour* with each pump!

At Wilmington, California, tankers are being loaded faster than at any other port in the world. Byron Jackson centrifugal marine loading pumps electric drive, are a big factor in contributing to this result.

The standard Byron Jackson centrifugal marine loading pump handles 8,000 barrels per hour. A battery of three of these units loads a 100,000-barrel tanker in four hours.

Centrifugals are rapidly replacing reciprocating pumps for the handling of oils, because of their low first cost, small foundation space, and freedom from repairs.

BYRON JACKSON
PUMP MANUFACTURING CO.
FACTORY AND MAIN OFFICE: BERKELEY, CAL.
BRANCHES: SAN FRANCISCO, LOS ANGELES, VISALIA, PORTLAND, OR. SALT LAKE CITY

now 91,500 bbls. daily including units under construction, an increase of approximately 100 per cent over the rated capacity of last year.

However, with a rated crude capacity of 776,717 bbls. daily it is apparent that there is still room for large expansion in cracking on the west coast. Many refineries have a larger cracking capacity than crude capacity and it is generally conceded that a 50-50 split between the two is desirable at a refinery operated primarily to secure gasoline from crude oil.

Reduce Capacities

In this connection it is interesting to note in the reports covering individual plants that several companies this year did not give their cracking plants as high a rating as to capacity as they did last year. Quite a number of companies which are operating the same number of units this year as last reduced their capacities in filling out their questionnaires from which the data given in this issue were obtained.

Those not familiar with the manufacturing end of the oil business will probably consider these changes inconsistent.

THE TEXAS COMPANY IS NOW OPERATING MOST REFINERIES

The Texas Company operates more refineries than any other company. At present 12 are in operation with a combined crude capacity of 134,050 bbls. daily. Six of the refineries have cracking equipment totaling 110,100 bbls. daily.

The company built one new plant at Craig, Colo. during the past year and purchased the plant of the Great Southern Refining Co. at Pryse, Ky. The plants are scattered in all parts of the country with the exceptions of the West Coast to provide products for its widespread market facilities.

In addition to those named, plants are located at Port Arthur, Port Nechez and Dallas, Tex., Lockport, Ill., Casper, Wyo., Shreveport, La., Norfolk, Va., Marcus Hook, Pa. and Providence, R. I.

As those operating cracking units know, the capacity of a particular cracking unit or battery of units is extremely flexible. A large amount of fresh charging stock can be charged to a unit if the owner is willing to sacrifice yields for volume. The character of the charging stock is also a factor in capacities.

The present trend in refining is to charge heavier material and recycle the stock with the view of securing the maximum yield of gasoline. This, of course, means less throughput capacity, a sacrifice which presumably is compensated for in the greater percentage of gasoline obtained. With this situation applying in their cases many operators have reduced the rated capacity of their equipment. This reduction on the part of several refiners only serves to emphasize the importance of the large increase in cracking facilities during the past year as shown in Table 1.

Many Replacements

Before leaving the subject of cracking it is necessary to point one more development which has been very apparent during the past year. A few companies are junking old equipment which has been in service for several years and replacing it with that which incorporates the lastest developments in processing.

The art of cracking is developing rapidly and the units installed two or more years ago usually cannot equal in efficiency the latest type equipment. This fact has induced a few of the companies—including several large refiners—to carry on replacement programs. A notable example is that of the Standard Oil Co. of Indiana, which was the pioneer in the development of the Burton process, which it owns.

The company, starting in 1913, installed hundreds of these units at its Whiting, Ind., Wood River, Ill., and Sugar Creek, Mo., refineries. Early in 1926, the company replaced some of these units with a battery of Holmes-Manley units at the Whiting refinery. The experiment was apparently successful for additional units are being installed at the Whiting refinery with installations under way at the Wood River and Sugar Creek plants. These units simply replace old Burton units so that the total capacities of the plants are not increased.

The same development is under way at the refineries of the Standard Oil Co. of New Jersey, which was and still is a large user of Burton stills. However, in new installations the company is installing the "Tube and Tank" process which it developed and which is conceded to be more efficient than the Burton process. The Tide Water Oil Co., at its Bayonne, N. J., refinery, is pursuing the same policy as the New Jersey Standard. Other examples could be cited. The coming year will no doubt see a further expansion of replacement programs.

Skimming Plants

The data on crude capacities do not entirely reflect the changes which have taken place during the past year in the so-called skimming phase of refinery operations. The data given in Table 1 show that the crude capacity of the operating refineries increased 155,987 bbls. daily. Most of this increase is accounted for in the States of California, Pennsylvania and Oklahoma where the larger companies increased their capacities.

Despite this small increase in capacity, changes are constantly being made in skimming plants. These changes like replacements in the cracking end are not reflected in data which are concerned with capacities. Instances could be cited where small companies have spent thousands of dollars and large companies millions of dollars in imroving their crude skimming equiment without adding a barrel to their total crude capacity.

Many refiners are installing pipe stills to handle their skimming operation, replacing their old shell still equipment. Bubble towers and other types of improved fractionating equipment are being installed with radical changes in the condensing and heat exchange equipment. These changes as just explained are being made to increase plant efficiency by lowering the per barrel operating cost of skimming rather than increasing the crude capacity.

Shut Down Plants

The fact that 33 plants were shut down during the year will be a surprise to many. The fatalities were not confined to any particular field, although a majority of the shutdowns occurred in the California and Mid-Continent fields. In California, the number of operating refineries dropped from 58 to 47 during the year. The shutdowns without exception were among the smaller companies.

California refining industry is going through a "weeding out process" which other areas had experienced in previous years. When California crude production in the Los Angeles Basin experienced sensational increases in 1923 and 1924, a large number of small refineries were built. These were usually skimming or topping plants and were located in the immediate vicinity of Los Angeles.

During the past two years many of these plants have been forced to shut down. With the flush production of the pools gone it has been difficult to obtain adequate supplies. These small companies also had to depend on a local market to get rid of their output and this has also been a handicap as prices in Los Angeles and the immediate vicinity are generally low when compared to the market at other points on the West Coast.

Temporary in Mid-Continent

In the Mid-Continent, some of the shutdowns are a recent development and in a few cases at least operations will probably be resumed as soon as conditions are more favorable. There are al-

"TOLEDO"—

THE TRADE-MARK OF THE ORIGINAL EASY-CUTTING PIPE TOOL

"TOLEDO" first gave to the world easy operating pipe-threading tools and made it possible for one man to thread even the large sizes of pipe with ease.

For over a quarter of a century "TOLEDO" tools have been known by experienced operators as the most efficient and perfect pipe tools.

For your protection and that you may know genuine "TOLEDO" tools, they now bear this trade-mark that represents durable, long-life, easy-cutting pipe tools that have no equal for service and satisfaction.

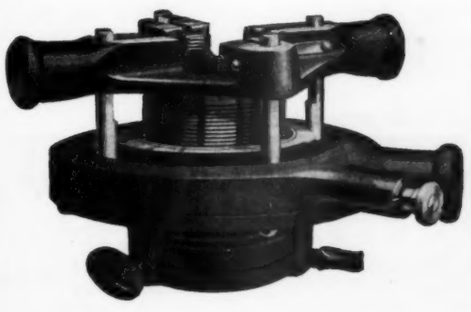
When buying look for the trade-mark, insist on it and accept no substitute if you would be sure of "TOLEDO" quality.

A postcard brings you the complete "TOLEDO" catalog and a list of the jobbers where you can secure genuine "TOLEDOS."

THE TOLEDO PIPE THREADING MACHINE CO.

TOLEDO, OHIO

New York Office, 72 Lafayette St.



"TOLEDO" No. 1A—the standard 1" to 2" Ratchet Pipe Threader.

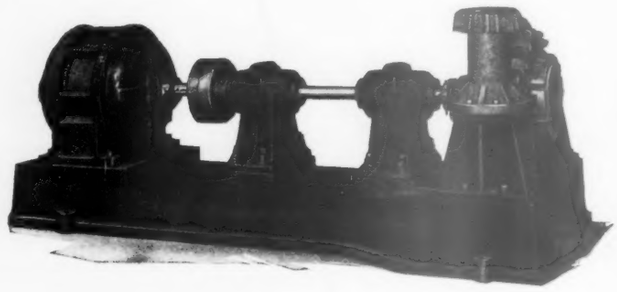
Net Price

$12.00

(West of Rockies $12.75) F. O. B. Toledo

A simple way around corrosion troubles

Corrosion, that aggravating and costly problem of the refinery, may be finally eliminated by the use of Duriron acid-proof equipment.



Duriron centrifugal pumps are dependable, sturdy, simple in construction, and built for day-in-and-day-out severe corrosive service.

Like other Duriron equipment, these pumps are no more affected by the corrosive content of sludge and acid clay than other materials are by pure water.

The hard surfaces of Duriron are not scored by the sharp particles in the solutions carried; thus long life and low maintenance are assured.

Duriron centrifugal pumps are produced in sizes from 2″ to 8″ suction, and may be furnished either for motor or belt drive.

If your replacements, repairs and breakdowns are eating into your profits, you can't afford not to use Duriron.

Duriron is produced only by

The DURIRON COMPANY
DAYTON·OHIO

SALES REPRESENTATIVES

Edward Soph
215-16 Alexander Bldg.,
Tulsa, Oklahoma

Ayres Engineering Co.,
908 Post-Dispatch Bldg.,
Houston, Texas

ways a few plants in that section which shut down as soon as operations are unprofitable. As in California most of these plants are small skimming plants which do not have the necessary elasticity in their operations to change their operations in line with changed market conditions.

Based on developments of the past year, it seems reasonable to assume that the trend toward fewer and larger refineries which has been under way since 1924 will continue. The art of refining is constantly calling for greater and greater investments to keep pace in plant efficiency. Many concerns prefer to get out of the business rather than increase their invested capital.

Consolidations and purchases have been one solution of this problem. In California, the Richfield Oil Co. has become one of the largest refinery organizations in the State by taking over other plants. The merger of the Julian Petroleum Corp. and the Marine Oil Corp. on the west coast is another illustration of this practice.

New Refineries

There was practically no new refinery construction during the years 1926, 1925 and 1924. After the war and up to 1923 as shown in Table 1, there was a "mania" for the construction of new refineries especially small skimming plants in the Mid-Continent Field. The bad market years which followed put an end to that and not until the past year has there been new construction worthy of special note.

The largest project of the year was the new plant of the Roxana Petroleum Corp., located at East Chicago, Ind. The corporation already had two major plants located at Wood River, Ill., and Arkansas City, Kans., but built the East Chicago plant to care for its market facilities in that section. The low cost water transportation afforded by the Great Lakes was also a factor.

The refinery starts operating this week with a crude capacity of 24,000 bbls. daily and a skimming capacity of 7,000 bbls. daily. The refinery is an excellent example of compact design made possible by the installation of modern equipment.

Gulf's Plants

In the East during the past year, the Gulf Refining Co. completed a 20,000-bbl. plant at Bayonne, N. J. The same company is now constructing a similar size plant at Girard Point, Pa. These refineries are listed as topping plants by the company, although both refine finished gasoline and other light end products. This company has large distributing facilities in the eastern states, and the new plants are better located to furnish the products desired than the company's two Texas refineries.

In California, the Union Oil Co. replaced one of its refineries which was burned in a disastrous fire last year. In Colorado, The Texas Company built a small skimming and cracking plant to handle production available in that section.

Panhandle Plants

The development of the Panhandle area in Texas was responsible for the construction of three skimming plants. These plants generally spring up when a new crude supply is found remote from pipe line connections, or where there is an excess of crude available. The plants built were those of the Alamo Refining Co., Amarillo Producers & Refiners Corp. and the MacMillan Refining Co. All of these plants recently have started operating. In Arkansas, the Simms Oil Co. is building a 5,000-bbl. skimming and cracking plant at Smackover. At Petty Island, Pa., the Crew-Levick Co. recently completed a new skimming and cracking plant with a capacity of 3,000 bbls. daily.

Rebuilt Plants

In addition to these new refineries, several companies practically rebuilt old refineries. At East Chicago, the Bartles-Maguire Co. took over an old skimming plant and installed a large cracking plant.

At Robinson, Ill., the Lincoln Oil Refining Co. (controlled by the Ohio Oil Co.) built a 5,000-bbl. skimming and cracking plant. The refinery previously had been a small skimming plant. At Cushing, Okla., the Empire Refineries, Inc., replaced a skimming plant destroyed by fire.

SHUT-DOWN PLANTS BY STATES

Company, plant location—	Daily Cap. (Bbls.)	Type of Plant	Type Cracking Process
ARKANSAS			
Home Refining Co., Camden	500	S	
Home Oil & Refining Co., Hot Springs	500	S	
E. M. Tulle Refinery	1,000	S	
Total	2,000		
CALIFORNIA			
Big Four Refining Co., Long Beach	800	T	
Brown Process Co., Maricopa	5,000	S	
Brown Process Co., Hynes	5,000	S	
California Refining Co., Long Beach	2,000	T	
California Naphtha Products Co., Long Beach	1,000	S	
Capitol Crude Oil Co., Santa Paula	200	T	
Commercial Refining Co., Hynes	2,000	T	
Crescent Refining Co., Los Angeles	750	T	
Crystal Petroleum Producing Co., Hynes	2,500	T	
Comet Oil Co., Vernon	3,500	T	
Delaney Producing & Refining Co., Long Beach	3,000	S	
Harbor Refining Co., Los Angeles	2,000	T	
Hart Dearing Refining Co., Fellows	3,000	T	
Holly Oil Co., Huntington Beach	3,000	T	
Julian Petroleum Corp., Hynes	6,000	S	
King Refining Co., Kern River	500	S&A	
Lovell Refining Co., Los Angeles	1,000	S	
Mercury Refining Co., Los Angeles	400	S	
Paraffin Co., Inc., Emeryville	1,100	A	
Perfection Refining Co., Hynes	1,000	T	
Producers Refining Co., Kern River	500	L	
Sentinel Oil Co., Los Angeles	1,000	S	
Universal Refining Co., Long Beach	1,000	S	
Union Oil Co. of California, Avila	10,000	T	
Western Refining Co., Wilmington	3,000	T	
Wilmington Petroleum Corp., Wilmington	500	L	
Wilshire Oil Co., Fellows	2,500	S	
Total	62,240		
ILLINOIS			
Indiahoma Refining Co., E. St. Louis	6,000	S	
Interocean Refining Co., McCook	5,000	S&L	
Martin Oil & Refining Co., Osborne	1,000	L	
Total	12,000		
INDIANA			
Portland Oil & Refining Co., Portland	600	S&C	Fleming
Interstate Gasoline Co., East Chicago	2,500	S&C	Greenstreet
Power Plus Oil Co., Columbus	1,200	S	
Total	4,300		
IOWA			
Omaha Refining Co., East Omaha	1,500	S&C	Cross
KANSAS			
Commonwealth Oil Refining Co., Moran	1,000	S	
Chemical Oil & Gas Co., Osawatomie	1,000	S	
Derby Oil Co. (Russell County Pipe Line Co.)	2,500	S	
Gordon Refining Co., Florence	1,000	S	
Grant Oil Co., Augusta	2,500	S&C	Jenkins
K-T Oil Corp., Wichita	1,000	S	
Lesh Refining Co., Arkansas City	2,000	S	
Miller Petroleum Co., Humboldt	2,500	S&C	Cross
Red Bird Refining Co., Fredonia	200	S	
Richardson Refining Co., Eldorado	1,500	S	
United Oil & Refining Co., Hutchinson	2,500	S	
Total	17,700		

Dubbs Units at Marland have Midwest Joints and Midwest Piping.

Midwest Joints reduce refinery fire hazards

THAT is one of the important reasons why Midwest Joints have so rapidly gained favor among the refiners who are familiar with the unusual service records of Midwest Joints upon hot oil and vapor lines carrying pressures to 500 lbs. and having temperatures that reach 1000° F.

Midwest Joints require no gaskets—there is nothing to blow out and cause the flash and fire that so frequently results in serious loss of property, loss of capacity and sometimes even loss of life.

Midwest Joints are made between specially machined convex and concave spherical surfaces integral with pipes, valves and fittings. Tight joints are assured regardless of piping alignment while correct alignment is essential with joints of other types. Midwest Joints make piping erection more easy and less expensive—this is another important feature.

We shall be glad to give you complete information regarding Midwest Joints without obligation on your part.

Ask for Circular O-2

MIDWEST PIPING & SUPPLY COMPANY

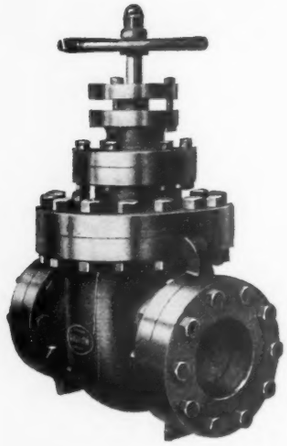
1400 So. Second St.,
SAINT LOUIS, MISSOURI

Tulsa Office: 805 Mayo Bldg. Chicago Office: 208 South La Salle St.

Fabricators of Oil Refinery, Natural Gasoline Plant and Power Piping

MIDWEST GASKETLESS JOINTS

SPEAKING OF FIRE HYDRANTS AND VALVES



Do you know that the Ludlow Valve Mfg. Company of Troy, New York, is the oldest established and the largest factory in the world devoted exclusively to the manufacture of gate valves and fire hydrants?

MANUFACTURED COMPLETELY

Being manufactured from the best quality of materials obtainable, in a fully modern and up-to-date plant by the highest skilled workmen, makes Ludlow fire hydrants and gate valves the best that it is possible to obtain. Though costing a little more, yet on the basis of service rendered they are reasonable in price indeed.

TRADE LUDLOW MARK

GENERALLY USED

Ludlow fire hydrants and gate valves are preferred everywhere. Many large companies have adopted as standard. It will most certainly pay you to investigate. Write us for catalog.

THE LUDLOW VALVE MFG. CO.
TROY, NEW YORK
BRANCH OFFICES:
Kansas City, Mo. Chicago, Ill.
Boston, Mass. Pittsburgh, Pa.

LUDLOW
FIRE HYDRANTS VALVES

KENTUCKY			
Central Producing & Refining Co., Bowling Green	600	S	
Parette Refining & Storage Co., Lexington	500	S	
Great Southern Refining Co., Lexington	2,500	S&L	
Inter-Cities Oil Co., Scottville	500	S	
Neha Refining Co., Lexington	800	S	
Passaic Oil & Refining Co., Franklin	500	S	
Total	5,440		
LOUISIANA			
Alexandria Refining Co., Alexandria	600	S&C	
Bartois Refining Co., Cedar Grove	100	S	
Delart Refining Co., Lafayette	300	S	
Dixie Oil Co., Superior	3,000	S	
Great Southern Refining Co., Ardis	2,000	S	
Gulf Coast Refining Co., Good Hope	10,000	S&A	
International Oil & Gas Corp., Cedar Groves	1,000	L	
Red River Refining Co., Crichton	1,800	S	
Southern Oil & Refining Co., Oil City	1,500	S	
Total	20,300		
MINNESOTA			
Pure Oil Co., Minneapolis	1,000	S&L	
MISSOURI			
Marshall & Co., Sheffield	2,500	S	
MONTANA			
American Refining Co., Great Falls	1,000	S	
Montana Refining Co., Billings	750	S	
Total	1,750		
NEW JERSEY			
Raritan Refining Corp., New Brunswick	5,000	S	
NEW MEXICO			
Bloomfield Oil & Gas Co., Bloomfield	300	S	
Sullivan Refineries, Inc., Dayton	1,500		
Sullivan Refineries, Inc., Clovis	500		
Total	2,300		
OHIO			
Akron Oil Refining Co., Akron	750	S	
*Ohio Refining Co., Cincinnati	1,700	S	
Total	2,450		

*Owned by Louisiana Oil Corp., Shreveport.

OKLAHOMA			
Carter Oil Co., Cartoco	5,000	S	
Chestnut & Smith Corp., Sand Springs	5,000	S	
Coleman Nelson Corp., West Tulsa	1,500	S	
Constant Refining Co., West Tulsa	2,500	S	
Empire Refineries, Inc., Oklahoma City	2,000	S	
Francis Oil & Refining Co., Francis	1,000	S	
Indian Chief Refining Co., Cushing	1,800	S	
Inland Refining Co., Cushing	1,000	S	
Lawton Refining Co., Lawton	1,000	S	
Maud Oil & Gas Co., Maud	400	S	
Mecca Refining Co., Allen	1,500	S	
Mid-Co Gasoline Co., West Tulsa	4,500	S&L	
Newkirk Oil & Refining Co., Newkirk	2,000	S	
Oil State Refining Co., Enid	1,800	S	
Pauline Refining Co., Hampton	1,200	S	
Producers & Refiners Corp., Blackwell	3,000	S	
Red Seal Refining Corp., Oklahoma City	2,000	S	
Santa Fe Oil & Refining Co., Ardmore	3,000	S	
Sinclair Refining Co., Cushing	6,000	S	
Sayre Oil & Refining Co., Sayre	500	S	
Southern Oil Corp., Yale	5,000	S	
Superior Oil Corp., Grandfield	2,000	S	
Turley Petroleum Co., Oklahoma City	2,500	S	
Valley Osage Oil Co., Okmulgee	2,500	S	
Wagoner Refining Co., Wagoner	300	S	
Whaleback Production Co., Oklahoma City	1,000	S	
Total	60,950		
PENNSYLVANIA			
Beaver Refining Co., Washington	200	S	
Chippewa Oil Co., West Bridgewater	300	L	
Franklin Creek Refining Co., Franklin	500	L	
Lakeside Oil Refining Co., Franklin	400	S&L	
White Oil Corp., Clarendon	1,000	L	
Total	2,400		
TENNESSEE			
Gillespie Oil Corp., Gallatin	250	S	
Nashville Oil Co., Nashville	500	S	
Total	750		
TEXAS			
American Oil Co., Pioneer	1,200	S	
Boardman Oil Co., Wichita Falls	750	S	
Bridgeport Refining Co., Bridgeport	800	S	
Brownwood Producing & Refining Co., Brownwood	200	S	
Crystal Oil Corp., Burkburnett	1,000	S	
De Leon Pipe Line & Refining Co., De Leon	1,500	S	
Denison Oil & Refining Co., Denison	1,000	S	
Four States Refining Co., Texarkana	700	S	
Houston Terminal Refining Co., Houston	3,500	S	
Interstate Gasoline Co., Iowa Park	2,500	S	
Interstate Refineries, Inc., Tiffin	2,000	S	
Interstate Refineries, Inc., Ranger	2,000	S	
Mexia Oil & Refining Co., Mexia	500	S	
National Refining Co. of Texas, Greenville	2,000	S	
Paterson Oil Co., Brownwood	1,000	S	
Petroleum Corp., Electra	1,500	S	
Pierce Petroleum Corp., Fort Worth	8,000	S	
Pierce Petroleum Corp., Texas City	5,000	S	
Southwestern Refining Co., Sour Lake	1,000	L	
South Bosque Refining Co., South Bosque	1,000	S	
Star Producing & Refining Co., Fort Worth	1,800	S&C	Fleming
Sweetwater Refining Co., Sweetwater	500	S	
Texas Oil Products Co., Waxahachie	2,500	S	
Waco Refining & Pipe Line Co., East Waco	2,500	S	
Wilson Brothers Refining Co.	2,500	S	
Total	46,950		
WYOMING			
Alliance Oil & Refining Co., Thermopolis	1,500	S	
Clay Spur Refining Co., Clay Spur	200	S	
Lovell Refinery, Lovell	600	S	
Egasco Holding Corp., Osage	1,000	S	Cross
Total	3,300		

NATIONAL OIL SCOUTS PLAN 1927 CONVENTION

SHREVEPORT, La., Mar. 5.—An executive meeting of the National Oil Scouts of America will be held in Dallas, Tex., March 12, primarily for the purpose of selecting the convention city for the 1927 annual convention to be held this spring or early summer, according to advices received by W. N. O'Roark, vice president of the organization. The convention dates will be decided at the executive meeting. Several cities in Texas are bidding for the convention.

Each district is winding up a membership campaign that is expected to make a membership record for the organization. During the executive meeting all of the preliminary plans for the convention will be presented and routine business will be disposed of.

More than 40 scouts are expected to attend the Dallas meeting. North Louisiana will be represented by Mr. O'Roark and J. H. Hesterly of the Louisiana Oil Refining Corp. South Arkansas scouts will be represented by T. L. Dean of the Simms Oil Co.

The CAMPBELLS are coming!

Two years ago Campbell Oil-Froth Absorbers were practically unknown. Yet in this short space of time 167 have been installed and many of the largest Producing Companies have standardized upon them.

The popularity of these Absorbers is due to their performance—for in every installation greatly increased production has been obtained.

Now Campbell Oil-Froth Absorbers are available to gasoline plants everywhere.

Keep your eye on Campbell progress.

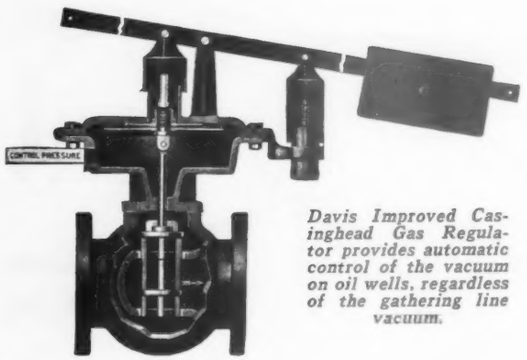
J. A. Campbell

Consulting—Designing—Construction

Natural Gas Engineer

P. O. Box 669 LONG BEACH, CALIF.

CAMPBELL OIL FROTH absorber

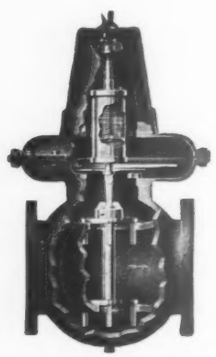


Davis Improved Casinghead Gas Regulator provides automatic control of the vacuum on oil wells, regardless of the gathering line vacuum.

DAVIS Valve Specialties for automatic pressure regulation are selected by most of the well known operators in the oil fields on a basis of actual performance. A steady volume of repeat orders is the result of the actual performance of Davis Specialties in thousands of installations.

Davis design is simple and effective, arranged to meet the specific conditions of each particular class of service. Dependability is the first consideration.

Send for catalogue. The detailed descriptions will show you the reasons for accurate and dependable service delivered by Davis Valve Specialties.



The Davis Supersensitive Relief Valve is used in vapor recovery systems to prevent vacuum entering the tanks and to relieve the pressure.

THE G. M. DAVIS REGULATOR CO.
409 Milwaukee Avenue,
CHICAGO, ILLINOIS

WESTCOTT & GREIS, Inc.
Sales Engineers
TULSA LOS ANGELES DALLAS

DAVIS VALVE
STEAM SAVERS SINCE 1875
SPECIALTIES

O&GJ 3-3 Gray

VOLATILITY AND FREEDOM FROM KNOCK NECESSARY IN MOTOR FUELS

By T. A. Boyd
Head, Fuel Section, General Motors Research Laboratories.

There are two outstanding properties as a desirable automobile fuel. Named in order of relative importance, from the standpoint of pleasing and efficient performance, these are (a) freedom from tendency to knock, and (b) suitable degree of volatility.

It is only recently, to be sure, that the importance of the first one of these properties has begun to be recognized universally. But everyone in the industry, perhaps, is alive to the significance of the situation now, and every effort is being made to produce and to distribute automobile fuels that are free from tendency to detonate in engines. The purpose of the addition of ethyl brand of antiknock compound to any gasoline that has already a suitable degree of volatility is to impart to it also the very desirable and essential property of freedom from knock, and the material is extremely effective for producing this result.

From a technical standpoint three important problems incident to the universal distribution of ethyl gasoline are these:

1. The standardization upon some suitable degree of freedom from tendency to knock which shall represent the minimum requirement for ethyl gasoline.

2. The standardization of and general agreement upon, a suitable method, and apparatus, for obtaining a quantitative measure of the tendency of any given fuel to knock.

3. The securing of a standard fuel or scale, for rating degree of knock—one that can be used universally.

Definite progress has been made during the past few months toward the solution of each one of these problems. A brief outline of these developments is given below.

Standard Fuel

It is not possible as yet to say just what will or what should be agreed upon as a minimum standard for automobile fuel in degree of freedom from knock. Some members of the industry say that they must have a fuel that will operate without knock in automobile engines having a compression ratio of 6.5:1, or even of 7.0:1, and others say that industry will be satisfied with compression ratios of from 5.5:1 to 6.0:1. The problem is complicated still further by the fact that different engines of the same compression ratio differ a great deal in the way a given fuel functions in them from the standpoint of knock.

However, the Ethyl Gasoline Corp. has adopted a tentative standard and every effort is being made to see that wherever ethyl gasoline is sold it shall conform to the minimum degree of tendency to knock set by this standard. Just as rapidly as possible the facilities necessary for making sure that ethyl gasoline does conform to the adopted standard are being installed at points where gasolines are treated with ethyl brand of antiknock compound. The antiknock value of a gasoline is equivalent to the compression of automobile engines which on the average, is in the neighborhood of one unit in ratio—that is to say, for instance, an increase in compression ratio of from 4.5:1 to 5.5:1. It should be said, however, that for different engines, this varies somewhat from the average and on either side of it.

It is in this matter of standardizing automobile fuels in degree of tendency to knock that one of the particular advantages of ethyl brand of antiknock compound lies. Regardless of what the initial knocking characteristics of a fuel may be, it can always be brought right up to the desired standard by treatment with the proper amount of ethyl fluid. If the initial knocking properties of the fuel are good the effect of ethyl can be added right on to the top of it, of course, thereby bringing it up to a very high standard of freedom from knock, if desired. And so, ethyl fluid offers a most convenient means of standardizing fuels, whatever their initial knocking properties may be.

Measuring Knock

Next, comes the matter of determining degree of tendency to knock, enumerated as (2) above. About 10 different methods of measuring intensity of knock have been described in the literature of the past few years. All of these can hardly be equally good, of course. But it is conceivable that any one of two or three different methods might give equally dependable results. The thing that must be done is for comprehensive comparison of the suitability of the various methods to be made by different laboratories, in order that those may be adopted which are best and which give accurate and concordant results.

Just such a test of methods as this has been under way during the past few months, the program having been initiated and fostered by the research laboratories of the Ethyl Gasoline Corp., under the direction of Graham Edgar. Nine different laboratories, using several different methods of measuring knock, are co-operating in the plan. Five-gallon samples of each of five different gasolines were made up and sent to each one of the co-operating laboratories. One of these was a straightrun automobile gasoline of rather decided tendency to knock; one was a similar gasoline, but having a much lesser tendency to knock; one was an aviation gasoline; one was a blend of benzol with the gasoline first mentioned above, and one was made by adding tetraethyl lead to the first mentioned gasoline. The relative knocking values of the fuels were not known to any of the participating laboratories, of course.

The recommended procedure for test was as follows:

(a) "The amount of tetraethyl lead necessary to make the knocking characteristics of each gasoline equal to that showing the least knock characteristics should be determined by whatever technique your laboratory may wish to employ."

(b) "The gasolines should be rated according to any other scale which your

(Continued on Page 157)

PRODUCING GASOLINE FROM SHALE OIL

(Continued from Page 96)

uct, but ordinarily the color will not stand up in the presence of light. This method of treating is accomplished by a momentary contact with weak sulphuric acid followed by immediately centrifuging out the acid and following this immediately by a treatment with clay, which is then promptly filtered off. In many instances a gasoline or motor fuel having a color of 30 may be obtained, which, on exposure to light, may drop to 25 or even 20. Following this treatment, shale oil gasoline usually must be treated with caustic soda solution or doctor solution if it is desired to remove the small amounts of cresols that are present. A treatment such as this will make a high class motor fuel in so far as engine operation is concerned, but will not be satisfactory as to sulphur content and color.

Contact Treating

Another method of treating shale gasoline which has been operated on a small scale consists in passing the gasoline vapor directly through a bed of earth or clay which has been treated with copper. By this method, a water-white gasoline may be made which is perfectly satisfactory except in some instances for the residual percentage of sulphur. There is no doubt but what this method can be commercially applied when it becomes necessary to produce satisfactory shale oil gasoline.

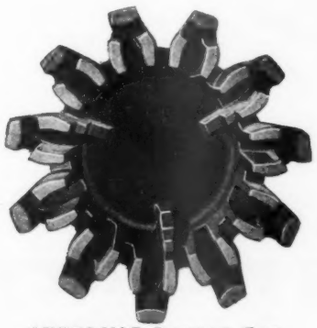
A third process consists in treating

STERLING

STERLING BUBBLE CAP

An Outstanding Fractionation and Absorption Device

STERLING BUBBLE CAP.
High Volumetric Capacity with Non-Interlocking of Bubbles.



STERLING BUBBLE CAP.
Orifice Area, 18½ Square Inches. Made for 3½-inch O. D. Vapor Nipples and 7½-inch Center Spacing. Weight, 11 pounds.

THE new STERLING BUBBLE CAP embodies, in simplest mechanical unit, the precise construction principles exactingly demanded by refinery engineers everywhere.

These ideal requirements involve:

Large heat transfer capacity;
Intimate contact between liquid and vapors;
Avoidance of entrainment of the liquids;
Utmost resistance to corrosion, etc.

Exhaustive tests of STERLING BUBBLE CAPS have determined the form, disposition of surfaces and the size and position of non-adjacent orifices; uniform thickness of metal line and spacings; to insure best distribution, non-interlocking of bubbles, and efficient contacting.

Trial installations have shown that considerably fewer STERLING BUBBLE CAPS are required per bubble tower—*hence smaller towers and less number of decks.* Further savings to refiners are shown in the longer operation without shut-down for cleaning, and long life due to the STERLING Corrosion-Resisting Cast Iron.

Please wire at our expense and a special representative will gladly wait on you with test data and charts. We can prove sturdiness, satisfaction and savings!

AMERICAN RADIATOR COMPANY

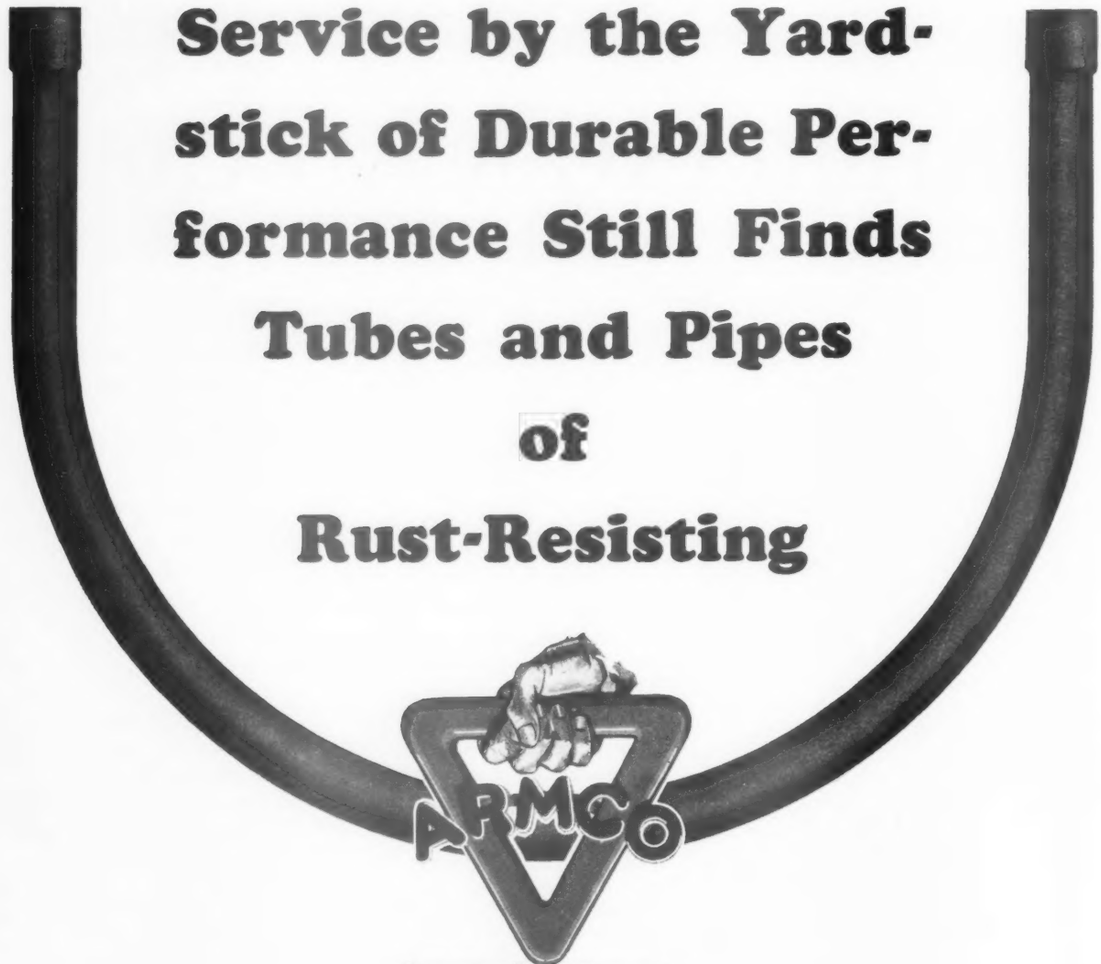
INDUSTRIAL DIVISION

40 W. 40th St., New York 816 S. Michigan Ave., Chicago

STERLING BUBBLE CAPS *and* STERLING OIL SECTIONS *are immediately available at our plants in Kansas City, Missouri, and Springfield, Ohio*

Measuring Long, Economical

Service by the Yard-stick of Durable Performance Still Finds Tubes and Pipes of Rust-Resisting



Ingot Iron

the choice for exacting refinery uses

Many refineries are getting two to three times more service from ARMCO Ingot Iron pipe and tubes than they formerly got from ordinary pipe and tubes. There's a reason for this—ARMCO Ingot Iron is "the purest iron made." It is made pure by special, scientifically-controlled processes so it will better resist the insidious electrolytic action that causes rust and corrosion in less pure irons and steels.

Ask us for performance data on ARMCO Ingot Iron line pipe for condensers, brine lines, vapor lines, run-down lines—and tubes for evaporators, condensers and coolers. It's your first step towards low-cost maintenance.

The American Rolling Mill Company
Middletown, Ohio
Export: The ARMCO International Corp.
Cable Address: --- ARMCO, Middletown

ARMCO TRADE MARK INGOT IRON
The Purest Iron Made

with metallic sodium under properly regulated conditions. This has been operated in a small model to produce an almost perfect gasoline in all respects, although it does not completely remove the sulphur in some instances.

Superior Gasoline

The cost of making shale oil gasoline, on the assumption that the original shale oil can be made economically, is not excessive. This is due in part, to the fact that such gasoline is really worth more than ordinary straightrun distilled gasoline. It is probable that shale oil gasoline can command a slight premium due to the unusually good performance in the automobile engine. Its value in this respect is shown by the following comparison with usual grades of motor fuel, in which:

"P"=straightrun paraffin base gasoline made by the normal distillation of Mid-Continent gasoline.

"N"=the average gasoline from Mid-Continent crude oil as found on the market.

"C"=straight cracked Mid-Continent gasoline.

"L"=gasoline made by the cracking of low temperature or primary coal tars.

"B"=a blend of 40 per cent of pure benzol with Mid-continent straightrun gasoline.

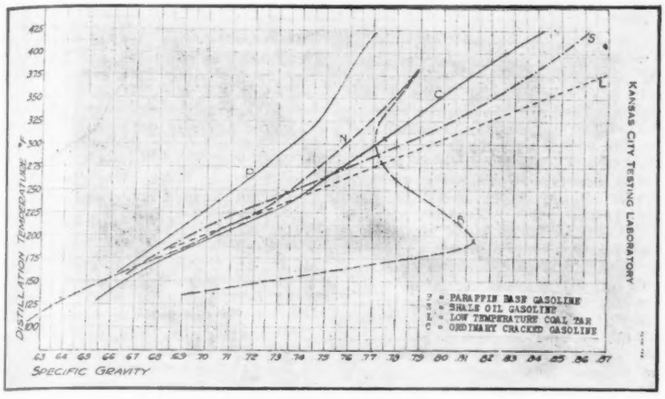

DISTILLATION TEMPERATURE
SPECIFIC GRAVITY
KANSAS CITY TESTING LABORATORY
P = PARAFFIN BASE GASOLINE
S = SHALE OIL GASOLINE
L = LOW TEMPERATURE COAL TAR
C = ORDINARY CRACKED GASOLINE

Figure 3.—Curves showing relation between specific gravity and distilling temperature of representative motor fuels.

	P	S	N	C	L	B
1. Gravity	65°	46.5°	57°	53°	37.5°	49.7°
2. Benzol equivalent	0	40 %	23 %	33 %	62 %	40 %
3. Allowable compression increase	0	12.9%	7.0%	10.0%	20.6%	12.9%
*4. Increased power output	0	15.0%	5.0%	6.0%	27.3%	9.0%

*(These tests were carried out in the variable compression engine described in The Oil and Gas Journal, Jan. 7, 1926, or Bulletin 22 of the Kansas City Testing Laboratory.)

Figure 3 shows the relation between the specific gravity and the distilling temperature of the above enumerated motor fuels, including the shale oil gasoline and the low temperature coal tar gasoline. In the case of the shale oil and low temperature tar gasoline, the cresols have been completely removed by caustic soda and the gasoline otherwise refined to produce a water-white, merchantable product. It will be noted that in these curves the hydrocarbons having the highest ratio of specific gravity to distilling temperature have the best antiknock and power values.

Summary

1. High yields of motor fuel of superior quality may be produced from shale by existing selected refining methods.

2. The production of motor gasoline from oil shale depends upon the possibility of producing shale oil in competition with petroleum.

GASOLINE MADE FROM GASES AT REFINERIES

(Continued from Page 94)

gasoline and water must be driven out, else the latter forms a slight emulsion with the oil particles, inhibiting, in some degree, further absorption.

Naphtha Absorption Plants

The naphtha absorption process is well adapted to most refineries. The plant is simple, and yields are increased over compression and oil plant practice, providing enough naphtha is used. Naphtha is passed countercurrent from top to bottom in a bubble-type absorber against a rising stream of refinery gas and vapors. The naphtha absorbs the gasoline and increases in gravity and volatility, so that finished motor fuel may come out of the bottom of the tower and be mixed with the regular refinery output. A naphtha should be chosen with insufficient "light ends" and of not too high endpoint, so that the gasoline will be absorbed and a blend made of gasoline characteristics.

A naphtha absorption unit consists of: (1) A compressor for compressing vapors prior to absorption; (2) necessary gathering lines; (3) an exhauster for gathering the gas and putting a slight vacuum on the vapors at their point of withdrawal from the refinery system; (4) scrubbers for washing the gas prior to absorption; (5) necessary vacuum and pressure relief valves on the system at various points; (6) tankage for naphtha and gasoline; and (8) pumps.

Some of the foregoing items are common to all type plants.

Saturation Percentage

The gas and vapors should be put under pressure in order to increase the per cent saturation of the gasoline in the naphtha, and thus cut down the amount of the latter needed. The pressure needed for a certain per cent saturation of gasoline in the naphtha can be determined by mixing in different proportions casinghead gasoline of, say, 90 A. P. I. gravity with the particular naphtha to be used, and determining the vapor pressure of the mixtures. These points are plotted and a curve drawn, using vapor pressures in millimeters as ordinates and per cent gasoline in the blend as abcissae. Knowing the richness of the gas in gallons per 1,000 cubic feet, and assuming 30 cubic feet of vapor per gallon of gasoline, one may approximately compute the pressure necessary in a naphtha absorption tower to attain a certain percentage saturation therein.

Typical calculations follow. The naphtha had the following characteristics:

A. P. I. gravity	45.7
I. B. P.	240° F.
F. B. P.	470° F.

This naphtha had a vapor pressure at 70 degrees Fahrenheit of 40 m.m. of Hg. It was blended with varying percentages of casinghead gasoline, and the vapor pressures determined, as follows:

Per Cent Casinghead Gasoline in Blend	Vapor Pressure Millimeters of Mercury
0	40
5	180
10	311
20	413
33⅓	641
100	*1,013

*Estimated.

It was found that the mixed refinery

LUBRICATION PLUS

McCord Force Feed Lubricators

+

The difference between McCord measured Force Feed Lubrication and the old wasteful inefficient type of drip feed oiler is reflected in:

(a) The longer life of engines, pumps and compressors McCord equipped.

(b) A saving of at least 50 % in oil.

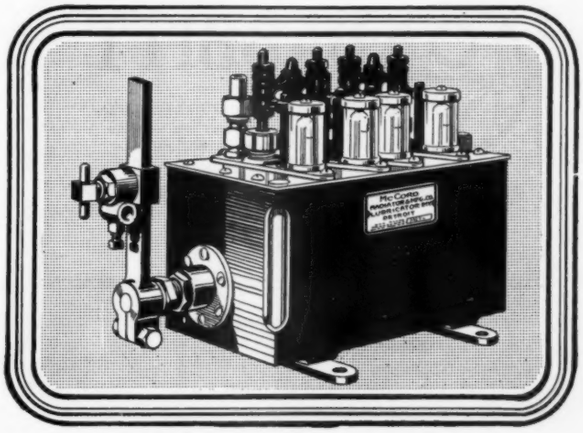
(c) Increased production —the result of continuous operation.

Standard of the Oil Fields

The reason is McCord Lubricators deliver a measured quantity of oil that is regulated in proportion to the speed of the engine.

Ask your National Supply salesman for further details

McCORD RADIATOR & MFG. CO.
Lubricator Division
DETROIT, MICH.



You Should Know These Babbitt Facts

THE booklet shown above contains a wealth of valuable information about babbitt. It has been compiled by engineering experts at great expense for the benefit of babbitt users. It will be sent to you without cost on your request.

Send for your copy of this helpful booklet right now before our supply is exhausted. You will prize the data and information it contains. Just send us your name and the book will be mailed to you gratis.

Hoyt's Great Eight

Genuine "A" Babbitt	*Faultless "A" Babbitt*
Electric Railway Babbitt	*Gas Engine Babbitt*
Oil Engine Babbitt	*Eagle "A" Babbitt*
Trojan Babbitt	*Standard No. 4 Babbitt*

HOYT BABBITT

For your copy of Babbitt Metal Data send your request to Department F

HOYT METAL COMPANY
SAINT LOUIS
New York Chicago Detroit

gases from all sources as they came from the refinery had a gasoline content of 2.65 gallons per 1,000 cubic feet. One can assume that each gallon of casinghead gasoline converted in vapor will produce 30 cubic feet of the latter.

The following pressures were then calculated:

Percentage Saturation of Gasoline in Naphtha in Absorption Tower	Pressure in Pounds Gauge
5	32
10	59
15	77
20	92
25	104
30	119
35	129

These calculations assume that there will be sufficient contact between liquid and gas to allow them to come to equilibrium. This will never quite occur in practice. Hence, one may use a figure of, say, 119 pounds pressure per square inch to get 25 per cent saturation of the gasoline in the naphtha. Two stage compression up to 150 pounds would cover all contingencies, such as varying richness of the gas, different kinds of naphtha, temperature changes and possible velocity of the gas through the absorber.

Twenty-five per cent saturation of gasoline in the naphtha may seem high in view of the low saturation rates of most natural gasoline absorption plants, but this is because the gasoline content of the gas is low, the pressure low, or both. The saturation one can carry is a function of the absolute pressure and the gasoline content of the gas. Hence, one finds a natural gasoline plant working on 2-gallon gas at, say, 30 pounds, with a saturation of 9 per cent theoretical, and something less than this in practice. With good bubble towers used for absorption purposes, thus bringing the gas and gasoline more nearly to equilibrium, the practical figure should begin to approach the theoretical possibility. This was seldom possible with the old-type towers, except as one used an excessive amount of absorption surface.

One simply balance saturation against pressure costs to arrive at a satisfactory figure. One can employ a great deal of naphtha or oil and low pressures and pay more for compressors and compressor operation and use less naphtha or oil. This point is not given nearly enough consideration in some refinery installations.

Typical Refinery Installations

Typical refinery conditions observed by the author will show how gas from various parts of the refinery will fluctuate in composition.

The gas came from the following sources: High-pressure gas from two Dubbs cracking units; gas from a pressure distillate run down tank; gas from agitators (open); gas from steam rerun still; gas from finished gasoline storage; gas from crude topping stills; gas from steam reducing asphalt stills; gas from air-blown asphalt stills.

Dubbs Fixed Gas

This gas was temporarily bypassed to a field, and its volume measured. Its gasoline content was determined by the charcoal method. Results were as follows:

(a) Volume measurements showed 308,850 cubic feet of free gas while the units were charging approximately 1,400 bbls. per day total. (b) The gasoline content by charcoal showed, respectively, .925 gal./M. and .947 gal./M. for an average of .935 gal./M.

308,850 × .936 = 289 gal./day.
289 ÷ 1,400 = .2064 gal./day/bbl. of charging stock.

Since average charging stock per day is approximately 1,000 bbls.: 1,000 × .2064 = 206 gal./day.

By direct pressure naphtha absorption this should increase by 25 per cent to 257 gallons per day average.

Pressure Distillate Run Down Tank

A volume measurement made on this tank while one Dubbs unit was operating showed approximately 15,000 feet per day of gas coming from the tank. With both units operating, there should be approximately 30,000 feet of gas coming from this tank, carrying from 3/5 gal./M. feet of gas. This then would mean approximately 120 gallons per day from this source.

The Treaters or Agitators

The writer was informed that from 7-10 per cent loss was encounterd chargeable to the combined losses of the agitators and steam still. As not much loss was encountered at the steam still, as will be subsequently shown, it naturally follows then that approximately 7 per cent may be safely charged to the agitators. Of course, a great deal of this is removed by acid absorption, etc., but a lot of the loss is doubtless due to the air blowing, or agitation carrying, vapors off into the air.

Since an average of approximately 29,000 gallons per day of P. D. and crude naphtha is treated, and 7 per cent lost, approximately 2,000 gallons per day is lost at this point. How much of this loss is chemical absorption and how much vapors can only be conjectured, but it is the writer's opinion that probably half of this goes off as vapor. A great deal of this is due to air agitation, and is not easily recoverable. First, because it would be inadvisable to mix the air content from the agitators back with the fuel gas. Second, because pressure absorption would be necessary, and this gas-laden air comes off in a "blow" over a short time only, and would, therefore, increase the compression machinery beyond reason; and, third, because of the danger from a flash doing serious damage if the agitator were sealed tightly. The latter difficulty can be overcome, but the first two would be difficult.

Mechanical agitation has been substituted for air agitation. This will result in a considerable decrease in agitation loss, in the first place; and, in the second place, make possible the recovery of such vapors as do escape. The crude naphtha treated is rather deficient in low boiling constituents which exert a considerable vapor pressure at ordinary temperatures. At 70 degrees Fahrenheit, 1½ per cent of a sample readily vaporized under vacuum. From this and other data and considerations, it is the writer's belief that about ½ per cent evaporation loss will be experienced in treating crude naphtha. An average of approximately 10,000 gallons of this material per day is treated, which would result in an average daily evaporation loss of about 50 gallons.

A much larger loss of pressure distillate was encountered, since it contains relatively larger amounts of the more volatile fractions. In addition, it contains considerable dissolved gas which will come off during agitation, and carry with it considerable valuable gasoline. The P. D. losses should vary from 1 per cent to 2 per cent evaporation on treating, depending on the temperature and other conditions. In other words, from 190 gallons to 380 gallons per day average. One may safely count on 250 gallons per day total recoverable gasoline from the agitators.

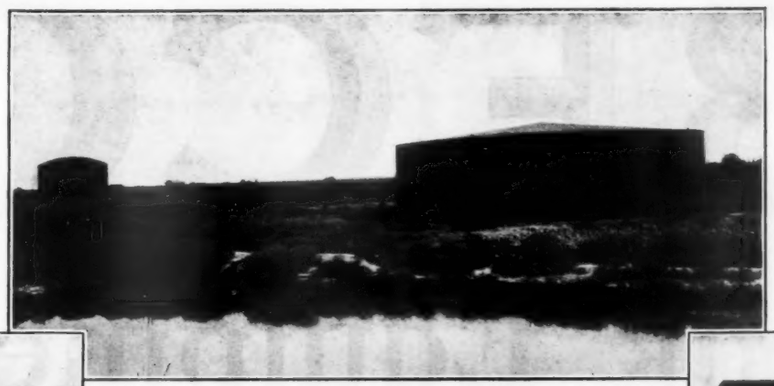
The Steam or Rerun Still

Six hundred cubic feet of gas per day bearing 4.62 gal./M. of gasoline was found coming from the gasoline look box. This is almost negligible, but in summer time this would probably increase to the point where it would pay to connect to the recovery system. No measureable quantity of vapors was coming from the naphtha look box.

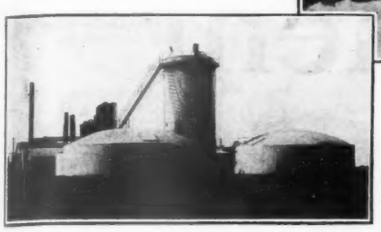
However, with air blowing discontinued in the agitator, there will be considerable recoverable gasoline show up in the vapors from the rerun still. Nevertheless, the writer did not feel it was conservatively safe to add anything to the total recoverable gasoline to be expected from this cause.

Finished Gasoline Storage

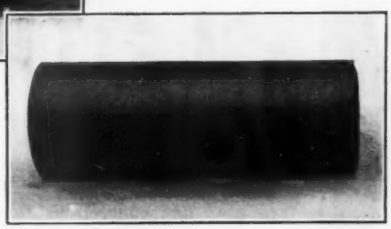
No tests were possible to determine the amount of recoverable gasoline from this source. There were two 55,000-bbl. tanks, and one 20,000-bbl. tank with tight roofs and also several smaller tanks scattered around the refinery. One tank contained casinghead blend. During the winter, the storage losses are small, but in summer time they mount up, amounting to many hundred gallons per day. The amount of loss depends on the temperature, the open space above the gasoline and the volatility of the gasoline. It is not unreasonable



10,000 and 55,000 Barrel Field Tanks



Agitator and 1,000 barrel treating tanks



All-riveted horizontal tank

Tanks for 75 Gallons or 80,000 Barrels

PITTSBURGH-DES MOINES steel tanks range in capacity from 75 gallons to 80,000 barrels. Horizontal welded or welded-and-riveted tanks are available from 75 to 26,000 gallons. Run-down tanks with dome roofs range from 500 to 5,000 barrels, and large field tanks from 5,000 to 80,000 barrels.

Pittsburgh-Des Moines steel tanks of these various standard designs and capacities are carried in stock, completely fabricated and ready for shipment. Special tanks of any shape or size will be designed and built for unusual requirements.

Send to the nearest Pittsburgh-Des Moines office for designs and estimates on the tanks you need. For handy reference, write for our catalogs.

Pittsburgh-Des Moines Steel Company

913 Curry Bldg., Pittsburgh, Pa. | **1227 Praetorian Bldg., Dallas, Texas** | **915 Tuttle St., Des Moines, Ia.**

New York Atlanta Chicago Seattle San Francisco

PITTSBURGH DES MOINES

Pittsburgh-Des Moines Steel Company
913 Curry Bldg., Pittsburgh, Pa.

Please send me your Field Tank Catalog No. 15. I am interested in tanks of ..... barrels capacity, to be located at .....

Please send me your Horizontal Tank Leaflet No. 15. I am interested in tanks of ..... gallons capacity.

Name .....

Company .....

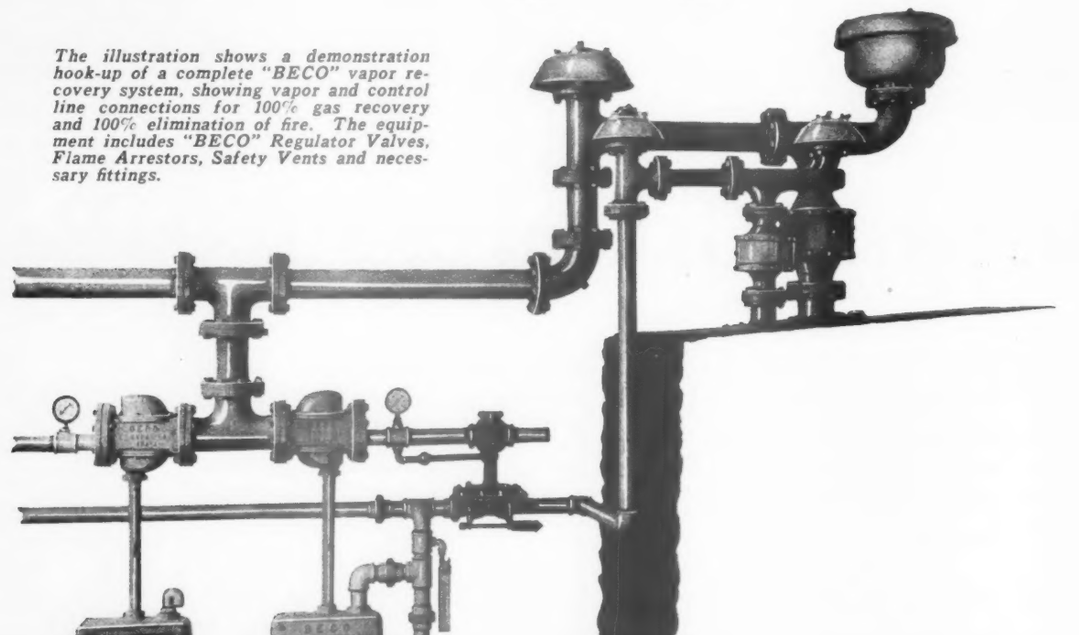
City ..... State .....

BECO

full line of

Tank Equipment

The illustration shows a demonstration hook-up of a complete "BECO" vapor recovery system, showing vapor and control line connections for 100% gas recovery and 100% elimination of fire. The equipment includes "BECO" Regulator Valves, Flame Arrestors, Safety Vents and necessary fittings.



100% gas recovery systems guarantee absolute safety and positive fire prevention

Brooks

Engineering Corporation

Engineers
Manufacturers
Distributors

1325 Maple Ave. Los Angeles, Calif.

833 Mayo Bldg., Tulsa, Okla.

BECO EQUIPMENT LEADS WHILE OTHERS FOLLOW

to expect 300 to 600 gallons per day recovery the year round from the finished gasoline storage. At the time the writer visited the plant, about 5,000,000 gallons of finished motor gasoline were in stock in two 55's and one 20,000-bbl. tank.

Reliable test data are available covering losses of this commodity in tanks of approximately the same size and type and degree of tightness. One test showed .0123 per cent per day, year-round average, and another showed .0127 per cent average per day from February to July. .0125 per cent of 5,000,000 gallons = 625 gallons per day. Of course, the tanks will not always be full. It has been shown, however, that the percentage loss on a partly filled tank is higher, but the total loss in gasoline lower. We coul'd assume what an average condition will be, but did not believe it unreasonable to expect 400 gallons per day from finished gasoline storage, 300 gallons of it accruing from the large tanks and 100 from several smaller tanks, one of which contains casinghead blend.

Crude Topping Stills

No measurable flow of vapor could be found from either Nos. 1, 2 or 3 stills, which are used for topping Panuco crude. A few years ago all the still vapors were connected into a 6-inch line and run under the boilers. When heavy crude, such as they were running, was being charged, not enough vapor was formed to light at the end of the pipe. The only time enough vapor was formed to ignite was while starting a batch of light Mexican crude. The refinery was only running Panuco crude oil.

Steam Reduced Asphalt Stills

Apparently a slight breaking down or cracking of the asphalt occurs while being steam reduced. A measurement at the start of steam-reducing No. 5 still did not show a measurable volume of gas coming off. Hence, no test was possible. A test taken on No. 8 still, near the end (26 hours) of the period showed 370 gals./M. of gasoline. No volume measurement was possible because of the way the run down lines were connected. The writer has every reason to believe the volume was very small.

A sample taken a few hours later on No. 8 still showed 462 galons per million cubic feet of gas, but again no volume measurement was possible, but no large volume of gas was apparent. It was noted that a large proportion of hydrogen sulphide was present, not only by the odor, but because, on distilling out the samples, free sulphur covered the sides of the receiver and lay on the bottom of it. The odor was that of hydrogen sulphide and sulphur dioxide.

Even though considerable volumes of this gas were available, the writer doubted the practicability of recovering it, as the treating cost would probably exceed the value of the gasoline recovered. The low gasoline content (4/10 gal./M.) would also necessitate high absorption pressures. This is the only possible source apparently of gasoline from the asphalt plant. A further series of tests may be advisable sometime later in warmer weather and with the plant running more smoothly.

Air-Blown Asphalt Stills

About 2,000,000 cubic feet of air per 24-hour day is blown through each still. A test on this air coming from the look box showed 28 gallons per million cubic feet, approximately half of which was casinghead gasoline, and the remainder was pitch distillate. From this, one can deduct about 35 gallons of gasoline per batch of asphalt, diluted with over 2,000,000 feet of air. Recovery is entirely impracticable. The source of this gas is probably from some cracking of the asphalt.

Summary of Recoverable Gasoline

Returning now to the original outline one finds possibilities of recoverable gasoline as follows:

	Gal./Day
1. Dubbs fixed gas	257
2. Pressure distillate tank	120
3. Agitators	250
4. Steam still	....
5. Finished storage	400
6. Crude topping stills	....
7. Steam-reduced asphalt	....
8. Air-blown asphalt	....
Total	1,027

In addition, some recovery may be made from loading-rack vapors and the steam still in the summer, etc., but the above covers the important items.

A plant to recover the above daily average of gasoline would cost approximately $30,000. At 12 cents per gallon, a gross yield value of $120 per day, or for 300 days out of a year (allowing for refinery and plant shutdowns), $36,000 Total operating expense should not run more than $25 per day. $25 × 300 = $7,500. Net earning then becomes $28,500 per year, or practically 100 per cent on the initial expenditure. The amount of additional gas made available for fuel is difficult to estimate. Probably this will amount to an additional $3,500 per year, or a total of $32,000 per year net profit. In addition, the refinery fire hazard would be greatly reduced.

It may be well to state that the daily yield will vary between wide limits. During cold weather, when refinery operations are at a low ebb, only a few hundred gallons per day yield will be received, but during hot weather and intensive activity, as much as 2,500 gallons per day will be saved. The plant, therefore, must be liberally enough proportioned to take care of these peaks.

It was our recommendation at this plant that a direct naphtha absorption plant be designed and installed, as this has proven the most satisfactory and efficient in refinery vapor recovery practice. The direct absorption blend can be further blended with motor gasoline to lower the I. B. P. and increase the more volatile portion of product in which the output of this refinery is somewhat deficient.

General Features of Plant Design

In looking toward the design of a recovery system to take care of the vapors and gases from the refinery the discussion of a few fundamentals is not out of place at this point.

In the first place, there will be a little over 300,000 feet of gas from the Dubbs units per day while they are in operation, carrying approximately 1 gal./M. of gasoline. On the average, there will be from all sources approximately 200,000 feet of vapors carrying 3½ gallons per 1,000 of gasoline. About one-half of the Dubbs gas can be taken from the high-pressure system at 150 pounds, while the other half is taken off at 15 to 25 pounds pressure. The high-pressure gas will carry one-half gallon per thousand. If one handles the vapors and low-pressure Dubbs gas together, one will then have an average of 350,000 feet per day of gas carrying 2.65 gal./M. of recoverable gasoline, which will have to be compressed to absorption tower pressure, while there will be taken from the Dubbs system above tower pressure, and therefore will need not be compressed.

It was proposed to introduce the latter high-pressure lean gas into the tower about one-third way up, so that it would not unduly increase the tower pressure necessary in order to get a satisfactory percentage saturation of the recovered gasoline in the absorbing naphtha. At the same time, this lean gas will be unmixed with the partially stripped rich gas, which at this point will carry approximately the same gasoline content as the high-pressure gas. This lean mixture will then be stripped in the upper two-thirds of the tower, finally coming in contact with the fresh incoming naphtha, so that there will be no gasoline of consequence allowed to escape from the tower.

Type of Absorption Tower

Various type fillings for absorption towers are used in refinery practice for absorbing gasoline from refinery gases. Wood grids, Raschig rings, Breaget rings, clay forms of various kinds, pipe fittings and plate bubble caps. That filling is the best which exposes most surface and takes up least space. What is desired, of course, is a thorough breaking up of the gas and naphtha so as to bring about the most intimate contact between the two. Thus absorbers can be made smaller and expenses reduced.

Of all the packed towers in use, those packed with Breaget rings are probably the best. But the best construction for bringing about intimate contact between gas and liquid is the bubble plate and cap construction, a so-called bubble tower.

You Can Bury Your Pipe and Forget Re-Conditioning For Years, When Protected With—

ECLIPSE SAVE-A-LINE

You can save thousands and thousands of dollars in repairs and replacements by protecting your pipe lines with this tough, elastic, non-cracking, non-peeling, heavy filmed coating.

ECLIPSE "Save-A-Line" has for years stood the only test that tells a true story—actual use in the fields. We can cite you instances where "Save-A-Line" has been used on pipe *laid in swamps* and on being examined years later was found to be *untouched with corrosion!*

The following well known companies subject all pipe line coatings under consideration, to a severe, but fair test. As a result they selected ECLIPSE "Save-A-Line" and are now using it regularly. The total of their orders last year ran into hundreds of carloads.

Gulf Pipe Line Co.
Lone Star Gas Co.
Wilmington Gas Co.
Humble Pipe Line Co.
California Petroleum Co.
The Shell Co. of California
Coast Counties Gas & Electric Co.
Public Service Gas & Electric Co.
New York State Gas & Electric Co.

ECLIPSE "Save-A-Line" is applied direct from package—no heating, mixing, wrapping of paper or burlap required. *Write for sample and quotations.*

The Eclipse Paint & Mfg. Co.
Cleveland, Ohio, U.S.A.

Dallas Denver Newark
Philadelphia San Francisco Charlotte, N. C.

Over 100,000 Barrels of Oil Daily Through Winkler & Koch Bubble Towers

WINKLER & KOCH BUBBLE TOWERS—

(1) Are designed to meet each refiners' particular condition.

(2) Give the absolute maximum yield of any product desired whether gasoline, kerosene, or special cuts.

(3) Absolutely eliminate rerunning.

(4) Effect a considerable fuel saving.

(5) Operate with a minimum back pressure.

(6) Will resist severe corrosive conditions for long periods.

(7) Are easy to disassemble and clean.

(8) Are independent of atmospheric conditions.

(9) Will permit of a liberal overload of either vapor or liquid handled.

(10) Afford a maximum of flexibility to meet changing conditions.

(11) Operate with the same high degree of efficiency on pipe stills, crude stills, rerun stills, cracking plants, and as natural gasoline absorbers or stabilizers.

(12) Are reasonable in cost.

These twelve seemingly academic points are the factors which determine profit. They have proven themselves in the hard school of experience.

Among the users of Winkler & Koch Equipment

*American Refining Co., Wichita Falls, Texas
*Anderson Prichard Oil Corp., Cyril, Oklahoma, Colorado, Texas
*Champlin Refining Co., Enid, Oklahoma
Col-Texas Refining Co., Colorado, Texas
*Derby Oil Co., Wichita, Kansas
*Empire Refineries, Okmulgee, Oklahoma
*Empire Refineries, Ponca City, Oklahoma
*Empire Refineries, Cushing, Oklahoma
*Empire Refineries, Gainesville, Texas
*Garber Refining Co., Garber, Oklahoma
Galena Signal Oil Co., Galena, Texas
Independent Oil & Gas Co., Okmulgee, Oklahoma
Inter Ocean Refining Co., Baltimore, Md.
*Johnson Oil & Refining Co., Cleveland, Oklahoma
Kanotex Refining Co., Arkansas City, Kansas
*Kent Middleton Refining Co., Minerva, Texas; Angus, Texas
Kettle Creek Refining Co., El Dorado, Arkansas
Lemont Refining Co., Lemont, Illinois
*Louisville Petroleum Refining Co., Louisville, Kentucky
*Magnolia Petroleum Co., Ft. Worth, Texas
*McColl Bros., Toronto, Canada
*Medway Oil & Storage Co., Isle of Grain, England
*Ouachita Valley Refining Co., El Dorado, Arkansas
Panhandle Refining Co., Wichita Falls, Texas
*Peerless Refining Co., Chanute, Kansas
*Peppers Gasoline Co., Covington, Oklahoma
*Roeser & Pendleton, Albany, Texas
*Rock Island Refining Co., Duncan, Oklahoma
Skelly Oil Co., El Dorado, Kansas
*Shaffer Oil & Refining Co., Cushing, Oklahoma
*Stellar Refining Co., Newark, Ohio
Sinclair Refining Co., East Chicago, Ind.
Texhoma Refining Co., Wichita Falls, Texas
Union Oil Co., Wilmington, California
Vickers Petroleum Co., Wichita, Kansas
White Eagle Oil & Refining Co., Augusta, Kansas

*REPEAT ORDERS

We solicit any opportunity to demonstrate to you what this equipment will do in your plant toward increasing yields and eliminating rerunning as well as what this will mean to you in increased profits.

THE WINKLER-KOCH ENGINEERING CO.

CONSTRUCTING AND CONSTRUCTING ENGINEERS

First National Bank Building

WICHITA, KANSAS

VOLATILITY, ANTIKNOCK NECESSARY IN GASOLINES

(Continued from Page 148)

laboratory may be in the habit of employing."

The first part of the program, or (a), was laid down in such a way as to put all the data reported on a comparative basis. Although the results of these tests have not all been reported as yet, it is apparent from those that are available so far, that this program is going to help a great deal toward making it possible to agree upon a universal method of measuring knock that will be suitable and accurate.

Reference Fuel

Finally, there is the third problem, or that of securing a standard or reference fuel to serve as a scale against which knocking properties may be rated. The necessity for this, as has been pointed out a number of times before, is brought about by the variableness of many of the factors relating to the engines used in making measurements of knock, or by the impossibility of standardizing all engine conditions. The standard fuel must, first, be such as to afford a graduated scale of different degrees of knock; second, it must be one that can be used interchangeably with gasoline in the tests; third, it must be such that an additional supply of exactly the same material can be obtained at any time; and, fourth, it must be of such a nature that different laboratories can be sure of the suitability or of the purity of their standards.

Non-Knocking Octane

All of these properties are met completely by the two pure hydrocarbons suggested by Graham Edgar of the Ethyl Gasoline Corp., in his paper presented at the Philadelphia meeting of the American Chemical Society last September, (published in Industrial and Engineering Chemistry, Vol. 19, page 145, January, 1927). One of these is normal heptane, any quantity of which may be secured in pure state from the oil of the Jeffrey Pine, a tree which grows rather widely along the west coast. The other hydrocarbon, is one of the octanes (trimethyl isobutyl methane), which, for convenience, may be called Edgar's nonknocking octane. This compound can be prepared pure and in any desired quantity by methods already worked out. Both of these compounds are paraffin hydrocarbons that may be obtained in pure state by anyone who desires them. The knocking properties of the two are such that by mixing them in varying proportions it is possible to duplicate the detonation characteristics of any commercial gasoline. Thus, the heptane, which forms the lower end of the scale, knocks as badly as kerosene; while, the octane, which stands at the opposite or the upper end of the scale, is about as free from any tendency to knock as benzol. These two hydrocarbons, therefore, represent a complete solution of the problem of finding a standard scale to rate knock by.

This, in brief, is the advancement that has been made in recent months toward the solution of these fundamental technical problems related to the standardization and the distribution of ethyl gasoline. The summation of them indicates that very satisfactory progress has been made toward the solution of problems that are of importance not only to the ethyl gasoline program, but also to the oil industry as a whole, and to the automotive industry as well.

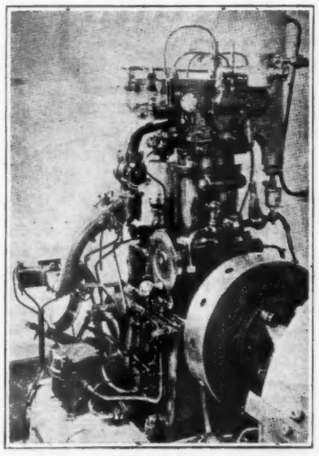
RESEARCH IN THE PETROLEUM INDUSTRY

(Continued from Page 132)

cal nature is carried on. This is organized under the general direction of Frank A. Howard and the development department is divided into the following divisions:

Research Work—Dr. C. O. Johns, director.

Mellon Institute of Industrial Research, University of Pittsburgh, where the Gulf Refining Co. has been sustaining researches on petroleum since 1911.



Experimental engine in laboratory of the Anglo Persian Oil Co., Sunbury-on-Thames, England.

Experimental Work—Dr. N. E. Loomis, director.

Inspection Laboratories—E. W. Dean, director.

Patents—C. A. Straw, director.

General Engineering Department and Physical Testing Laboratory—C. H. Haupt, director.

Chief Chemist—Dr. B. F. Carver.

The chemical and other experimental work of the Standard Oil Co. of Indiana is carried out under the general direction of W. H. Bahlke, D. P. Barnard, F. M. Rogers, F. W. Sullivan, W. G. Whitman and Robert E. Wilson.

Anglo-Persian Experiments

The Anglo-Persian Oil Co. has a splendid research station in the outskirts of London, this work being carried on under the direction of Dr. A. E. Dunstan, assisted by F. E. Thole and Col. J. M. Auld. One of their experimental variable compression engines for antiknock studies is shown in the accompanying illustration. It is not a Ford engine. Two of the finest research and experimental laboratories in the whole country are found on the Pacific Coast, the laboratories of the Union Oil Co. and of the Standard Oil Co. of California.

Library of the Los Angeles laboratory of the Union Oil Co. of California.

The Universal Oil Products Co. has maintained an excellent experimental laboratory at Riverside, Ill., under the general direction of Dr. Gustav Egloff and Dr. W. A. Faragher, director of research, Dr. Jacque Morrell, assistant director.

Dr. T. T. Gray maintains an excellent research laboratory in Elizabeth, N. J., where he developed the vapor phase refining process which is associated with his name.

The Magnolia Petroleum Co. has an engineering and chemical organization at Beaumont, Tex., and is carrying out an extensive program of research with the co-operation of the firm of A. D. Little & Co. in Cambridge, Mass.

One of the very noticeable changes in the general attitude of the larger companies toward research is the increasing tendency to publish the results of such researches as are capable of adequate protection by patents or which do not jeopardize the interests of these companies. This is plainly shown by the increasing of the number of researches published in recent years in the Journals of the American Chemical Society.

All of this splendid progress warms the cockles of the hearts of those who believe in research and believe it is one the principal instruments of progress, and the way in which some companies have gone into research is illustrative of the way which oil men do things when they are convinced that it is worth while to do them.

Central laboratories for research and control work of the Standard Oil Co. of New Jersey, Bayonne, N. J.

GENERAL ASPHALT REPORT

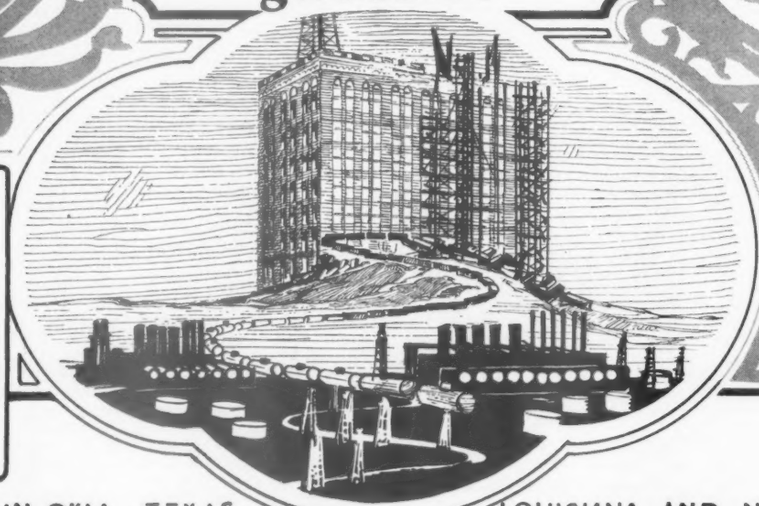
A statement issued by General Asphalt says its properties have been extensively improved during the year and a cracking plant is now in process of erection at Perth Amboy oil refinery. Promotion of foreign trade has been extended. Venezuelan royalty crude oil delivered to company in 1926 was 1,020,328 bbls. compared with 777,314 in 1925. Production from the company's oil properties in Trinidad increased from 442,158 bbls. in 1925 to 525,814 in 1926. Shipments were made for the first time from its own eastern property which produced 242,806 bbls. The production of native asphalts increased from 234,752 tons to 284,225 (crude.)

PHILLIPS PETROLEUM COMPANY
New Building

General Offices Bartlesville Okla.

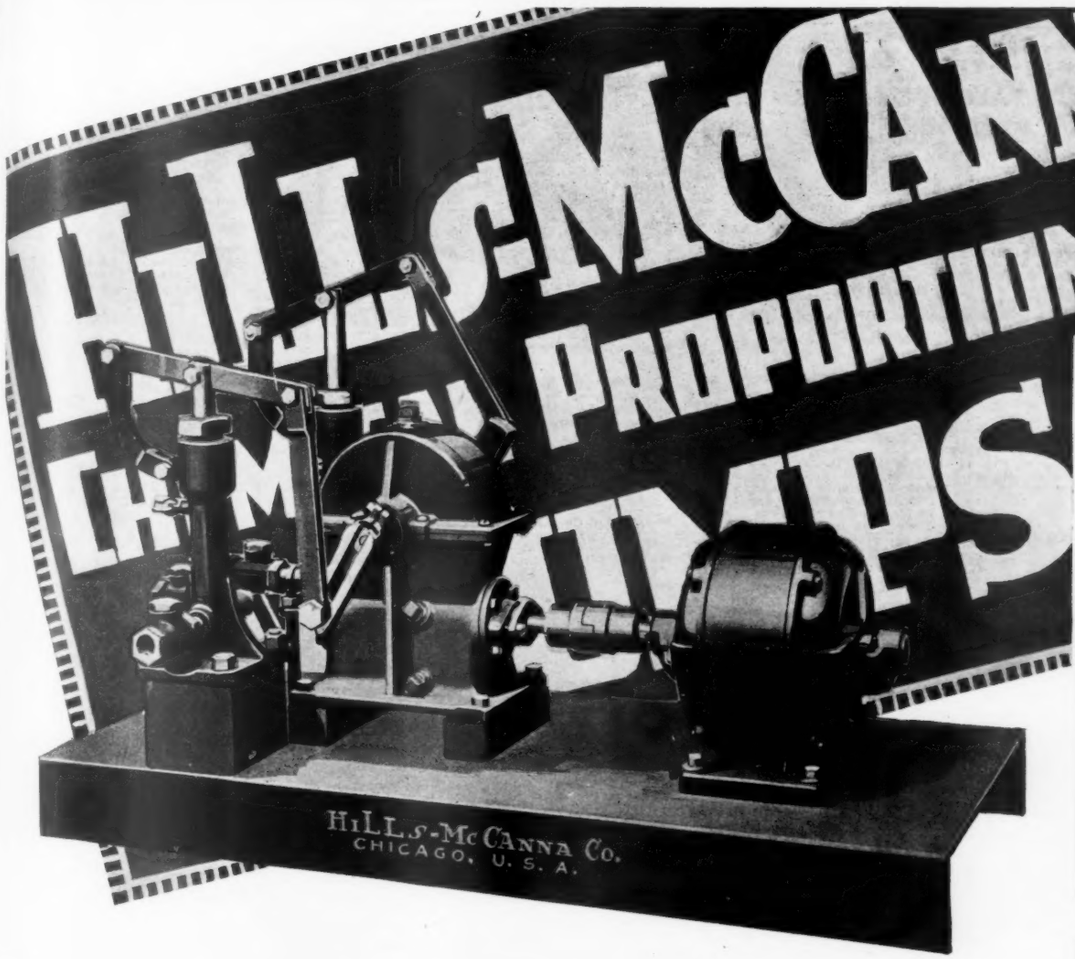
PHILLIPS PETROLEUM COMPANY

Producers of high grade crude oil and manufacturers of natural gasoline



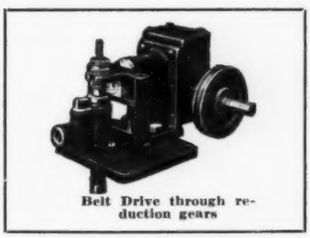
Straw and clay made the bricks —mortar bound them together— but crude oil and natural gasoline raised them from the ground.

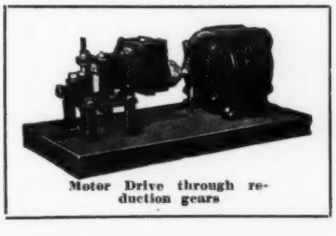
PLANTS- LOCATED IN OKLA., TEXAS, LOUISIANA AND NEW MEXICO

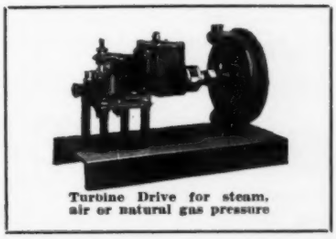


Chain and Sprocket Drive

Direct Reciprocating Drive taking power from pump or working barrel


Belt Drive through reduction gears


Motor Drive through reduction gears


Turbine Drive for steam, air or natural gas pressure

SIMPLIFY TREATING OPERATIONS

Accurate Measure - Positive Delivery - No Waste of Chemicals

Filling a long felt need for a device with variable delivery, without speed change—Hills-McCanna Chemical Proportioning Pumps are growing in favor wherever installed.

They offer an economical, positive, mechanical means of delivering measured quantities of treating solutions over indefinite periods regardless of pressure pumped against—and they can be made in a variety of alloys to resist corrosion.

Due to the losses suffered from underfeeding or overfeeding, many prominent Producers and Refiners have been quick to realize the advantages that Hills-McCanna Chemical Proportioning Pumps offer. By installing them you too can put your treating operations on an economical and positive basis.

Our Engineers will be glad to simplify your treating, and may prove that the saving in chemicals alone will pay for the installation. Consult us!

Bulletin on request.

HILLS-McCANNA CO.
2025 Elston Ave. - - - - - - - - - Chicago

Non-Ferrous Alloys Since 1870 - - - - - - Chemical Pumps
Speed Reducers - - - - - - - - - - Force-Feed Lubricators

WILDCAT OPERATIONS IN PANHANDLE

(Continued from Page 48)

Prairie O. & G. Co.'s No. 2 F. E. Percival, NE cor. W ½ NW Sec. 199, Blk. 3 ..... Building rig.
Republic Prod. Co.'s No. 1 Burnett, Sec. 116, Blk. 4..... Drilling.
Roxana Pet. Corp.'s No. 1 E. F. Bryan-C, Sec. 107, Blk. 4.. Drilling 2,780 ft.
Roxana Pet. Corp.'s No. 1 Brown, Sec. 106, Blk. 4..... Drilling 1,690 ft.
Roxana Pet. Corp.'s No. 2 Brown, SE cor. Sec. 106, Blk. 4 ..... Drilling 1,790 ft.
Skelly Oil Co.'s No. 1 H. Schafer, SW cor. N ½ Sec. 198, Blk. 3 ..... Drilling 575 ft.
Skelly Oil Co.'s No. 2 H. Schafer, Sec. 198, Blk. 3..... Fishing 500 ft.
Skelly Oil Co.'s No. 3 H. Schafer, Sec. 198, Blk. 3..... Spudding.
Skelly Oil Co.'s No. 4 H. Schafer, Sec. 198, Blk. 3..... Spudding.
Skelly Oil Co.'s No. 1 E. F. Bryan, Sec. 92, Blk. 4..... Fishing tools 3,210 ft.
Stubblefield et al's No. 1 E. Cooper, SW cor. NE. Sec. 5, Blk. 9, I. & G. N. Sur. ..... Cellar.
The Texas Company's No. 1 M. P. Co. fee, Sec. 91, Blk. 4. Swabbed 150 bbls. 2,159-3,218 ft.
The Texas Company's No. 2 M. P. Co. fee, Sec. 91, Blk. 4. Run 8-in. 3,155 ft.
The Texas Company's No. 1 C. A. Noel, Sec. 26, Blk. 4 Drilling 2,100 ft.
The Texas Company's No. 1 J. L. Noel, Sec. 187, Blk. 3.. Drilling 2,420 ft.
The Texas Co.'s No. 1 J. C. McConnell, NE cor. Sec. 66, Blk. 4 ..... Drilling 1,175 ft.
Vitex Oil Co.'s No. 1 J. H. Eller, NE cor. NW Sec. 200, Blk. 3 ..... New location.
Vitex Oil Co.'s No. 1 C. R. Garner, SW cor. Sec. 113, Blk. 4, I. & G. N. Sur. ..... Rig.
White Deer Oil Co.'s No. 2 Jordan-Brown, Sec. 104, Blk. 4. Fishing casing 2,120 ft.

CHILDRESS COUNTY

Brookins et al's No. 1 Mrs. Givens, 600 feet N and W of SE cor. Sec. 676, W. & M. W. Sur. ..... Rigging up.
C. L. Sloane et al's No. 1 B. P. Smith, Sur. 49, F. P. Knott Lands ..... Shut down 1,260 ft.

COLLINGSWORTH COUNTY

Duke & Langford's No. 1 Martha Johnson, Sec. 97, Blk. 22. Drilling 1,965 ft.
Harmon & Deems' No. 1 Wilson (Scott), Sec. 44, Blk. 21.. Location
Martin et al's No. 1 T. V. Norwood, Sec. 30, Blk. 16..... Spudded and shut down.
Wischkamper's No. 1 fee, C SE, Sec. 93, Blk. 16..... Estimated 2,000,000 ft. gas 1,527-60 ft. and 1,910-20 ft.; shut down 2,000 ft.

DALLAM COUNTY

James et al's No. 1 fee, Sec. 9, Blk. 47½..... Rebuilding rig 2,870 ft
Harry Skelly et al's No. 1 Capitol Synd., Sec. 19, Blk. 17 Set 12-in. 1,175 ft.; shut down.
Marland Oil Co. et al's No. 1 Capitol Synd., Sec. 36, Blk. 18, Capitol Synd. land ..... Drilling 950 ft.

DEAF SMITH COUNTY

Julian & DeGrace's No. 1 Mrs. R. A. Hindley, Sec. 47, Blk. K-8 ..... Rig blown down.
Red Hill Oil Corp.'s No. 1 Barrett, Sec. 93, Blk. K-4..... Drilling 600 ft.

DONLEY COUNTY

A. T. Drilling Co.'s No. 1 F. E. Harrington, Sec. 39, Blk. 3-C ..... Top lime 2,070 ft.; shut down 2,680 ft.

GRAY COUNTY

Archer, Blake et al's No. 1 Turneau, Sec. 111, Blk. 2-B.. Spudded and shut down.
Amos et al's No. 1 Crews, NW cor. Sec. 9, Blk. 25..... Rigged up and shut down.
Bay Shore Oil Co.'s No. 1 C. W. Bradford, Sec. 143, Blk. 2-B ..... Total depth 2,666 ft.; pumping water on gas.
Blackwell & McGee's No. 1 Bowers, Sec. 92, Blk. 2-B Total depth 2,270 ft.; shut down.
British-Amer. O. Co.'s No. 1 J. E. Meers, Sec. 107, Blk. 3.. 58,000,000 ft. gas and slight spray oil; drilling granite 3,111 ft.
British American Oil Co.'s No. 1 J. M. Patton, Sec. 61, Blk. B-2 ..... Rigging up.
Cole O. & G. Co.s (was Magdalene Oil Co.'s) No. 1 J. E. Williams, Sec. 17, Blk. 1..... Show gas 2,336 ft.; shut down 3,240 ft.
Jack Doyle's No. 1 D. W. Osborne, SE cor. Sec. 109, Blk. 3 ..... New location; rig.
Empire G. & F. Co.'s No. 1 W. C. Archer, SW cor. NE Sec. 174, Blk. 3 ..... Building rig.
Empire G. & F. Co.'s No. 1 B. Hughey, Sec. 129, Blk. 3.. Set 6-in. 3,024 ft.; rainbow show oil 3,063 ft., 35,000,000 ft. gas; 1,100 ft. oil and 1,500,000 ft. gas granite wash 3,120-25 ft.; total depth 3,160 ft.; spraying 26 bbls.; may deepen.
Empire G. & F. Co.'s No. 1 J. F. Meers, NE cor. SE Sec. 107, Blk. 3 ..... Spudded 330 ft.
Empire G. & F. Co.'s No. 1 J. J. Wall, Sec. 161, Blk. 3.. Total depth 2,930 ft.; shut down; 43,000,000 ft. gas., mixing mud to hold gas.
Empire G. & F. Co.'s No. 1 Webb, SW cor. Sec. 59, Blk. 25 ..... First gas 2,130 ft.; 5,000,000 ft. gas 2,250 ft.; drilling.
Foster et al's No. 1 G. Cutebank ..... New location.
Gray Pet. Co.'s No. 1 W. L. Herndon, Sec. 147, Blk. 3. Shut down 2,405 ft.
Gulf Production Co.'s No. 1 J. M. Saunders, Sec. 40, Blk. 2 ..... Drilling 2,390 ft.
Humble O. & R. Co.'s No. 1 T. B. Haggard, SW cor. Sec. 112, Blk. 3 ..... Drilling 900 ft.
Johnson & Martin's No. 1 Fanny Holloway, Sec. 7, Blk. H, A. W. Wallace Sur. ..... Rig on ground.
John G. Lane's No. 1 A. Chapman, Sec. 19, Blk. 1, A. C. & H. B. Sur. ..... Shut down 3,000 ft.
Magnolia Pet. Co.'s No. 1 fee, Sec. 11, Blk. 3..... Underreaming 8-in. 2,340 ft.
Neudigate et al's No. 1 A. Chapman ..... New location.
Pampa Oil Co.'s No. 1 W. R. Campbell, Sec. 90, Blk. 3.. Shut down 120 ft.
Pampa Pet. Co.'s No. 1 Mary Leopold, Sec. 141, Blk. 3.. Shut down 2,355 ft.
Purple Sage Oil Co.'s No. 1 Johnson, Sec. 8, Rockwall County school land ..... Drilling 700 ft.
Riley & Heck's No. 1 Mrs. Hopkins, Sec. 66, Blk 2-B.. 1,000,000 ft. gas 2,720-40 ft.; shut down.
Ruby Oil Co.'s (was Weir, Kribs & Finklea's) No. 1 B. F. Talley, Sec. 114, Blk. 2-M..... Shut down 635 ft.
Salisbury & Reynolds' No. 1 M. Huselby, C SE NE NE Sec. 55, Blk. 25, H. & G. N. ..... Location.
C. B. Shafer's No. 1 G. Cole, SE cor. W ½ SW Sec. 195, Blk. 3 ..... Building rig.
The Texas Company's No. 1 H. M. Barrett, Sec. 131, Blk. 3 ..... Rotary; run 10-in. 1,885 ft.
The Texas Company's No. 1 J. B. Barrett, NE cor. NW NW Sec. 130, Blk. 3 ..... New location.
The Texas Company's No. 1 Osborne, Sec. 108, Blk. 3.... 30,000,000 ft. gas 2,485-2,625 ft.; drilling.
The Texas Company's No. 3 Saunders, C E 2/3, Sec. 3, B. & B. Sur. ..... 1,000,000 ft. gas 2,280 ft.; moving boiler back.
Travis et al's No. 1 J. Back, Sec. 44, Blk. 25..... Standardizing 2,024 ft.
J. Williams et al's No. 1 C. W. Bradford, Sec. 123, Blk. B-2 ..... Rig blown down.

HANSFORD COUNTY

Caldwell et al's No. 1 J. Adriance, Sec. 21, Blk 2, G. H. & H. Sur. ..... Shut down 585 ft.
F. W. Dillard et al's No. 1 F. A. Davis, Sec. 50, Blk. 2.. Spudded and shut down.
Oklavania Oil Co.'s No. 1 Whitson, Sec. 2 ..... Drilling 2,100 ft.

HARTLEY COUNTY

Amerada Pet. Corp.'s No. 1 Frances Farwell, Sec. 27, Blk. 16 ..... Drilling 2,455 ft.
Deep Rock Oil Co.'s No. 1 Lyman & Balfour, Sec. 9, Blk. 2 ..... Shut down 1,710 ft.
Eslick et al's No. 1 J. B. Irving, Sec. 13, Blk. 13..... Total depth 2,050 ft.; fishing.
W. W. Holmes' No. 1 G. B. Coots, Sec. 58, Blk XR..... Show gas 2,450-80 ft.; set 6-in. 2,800 ft.; 600 ft. water 2,840 ft.; shut down 2,848 ft.
J. E. McKanna's No. 1 E. S. Collins, Sec. 3, Blk. LS Drilling 2,620 ft.
J. E. McKanna's No. 1 Frances Farwell, Sec. 20, Blk 22.. Drilling 960 ft.
J. E. McKanna's No. 1 J. M. Shelton est., Sec. 29, Blk. 202. Underreaming 6-in. 3,327 ft.; 160 ft. salt water 3,320-25 ft.
Kork Oil Co.'s No. 1 J. M. Shelton est., Sec. 1, Blk. 8-B Spudded and shut down.

HEMPHILL COUNTY

A. J. Calhoun's No. 1 J. C. Isaacs, Sec. 189, Blk. C..... Spudded and shut down.
Hoover et al's No. 1 Schaller est., Sec. 4..... Spudded and shut down.
Hoover et al's No. 1 fee, J. S. Hood Sur. ..... Small show oil and gas 4,027 ft.; hole full water in sandy lime 4,005-10 ft.; running 5-in. 4,224 ft.

HUTCHINSON COUNTY

Amarillo Oil Co.'s No. 1 Ida Ingerton, 9,280 feet from NL and 330 feet from EL Sec. 41, Blk. 47..... Rig.
Anderson & Pritchard's No. 1 Yake, Sec. 1, Blk. J..... Top lime 1,930 ft.; set 8-in. 1,936 ft.; 45,000,000 ft. gas 2,640 ft.; top pay 2,746 ft.; spray 20 bbls.; set 6-in. 2,762 ft.; 250 ft. water at 2,786 ft.; swabbed 5 bbls. oil and 30 bbls. water in 12 hours 2,817 ft.
Dominion Oil Co.'s No. 1 C. H. Jasper..... Drilling 2,100 ft.
Marland Oil Co.'s (Leo Flowers) No. 1 Carver, Wm. Heath Sur. ..... Underreaming 8-in. 2,364 ft.; total depth 2,410 ft.
Pole Cat Oil Co.'s No. 1 W. B. Halle, Sec. 24, Blk. M-21. Rig.
Panfield Oil Co.'s No. 1 Luginbyhl Bros., Sec. 50, Blk. M-23 ..... Shut down 1,200 ft.
Prairie, Shamrock & Hagy's No. 1 Yake, Sec. 35, Blk. 47. Small shows in lime 2,818-25 ft. and 2,872-75 ft.; 300 ft. oil and 600 ft. water 2,890 ft.; drilling 3,130 ft.
Prairie O. & G. Co. and Vacuum Oil Co.'s No. 1 Cal Merchant ..... Digging cellar.
Vitex Oil Co.s (was Get Oil Co.'s) No. 1 W. F. Allen.. Rigging up.
Wentz Oil Corp.'s No. 1 Cal Merchant, Sec. 34, Blk. 47 Shut down 2,800 ft.; to complete as gasser.

LIPSCOMB COUNTY

Everett et al's No. 1 Mrs. H. D. May, Sec. 612, Blk. 43 Shut down 960 ft.
McCorkle's No. 1 A. Barton ..... Fishing 3,760 ft.
Smith, Kinsley & Ruby's No. 1 C. W. Jones, NE cor. SW Sec. 100, Blk. 43 ..... Drilling 410 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Masterson-J, Sec. 59, Blk. O-18 10,000,000 ft. gas 3,625-40 and 3,050 ft.; total depth 3,110 ft.; rig burned; rebuilding.
Amarillo Oil Co.'s No. 2 Terry Thompson, Sec. 19, Blk 44 Show gas 2,750-2,830 ft., 70,000,000 ft. gas 2,820-90 ft.; total depth 2,950 ft.; straightreaming.
Douglas Oil Co.'s No. 1 H. W. Beauchamp, Sec. 112, Blk 44 ..... Hole full water 1,470 ft.; drilling 1,700 ft.
Marland Oil Co.'s No. 1 J. T. Sneed, Jr., Sec. 25, Blk. 1... Rebuilt rig 3,045 ft.; fishing.
Humble O. & R. Co.'s No. 1 Kilgore, Sec. 28, Blk. 44..... Show gas 2,960 ft. 3,010 ft., and 1,000,000 ft. at 8,045 ft.; increased to 6,000,000 ft. at 3,085 ft.; cleaning out 3,520 ft.
Morton & Co.'s No. 1-H Rubert, Sec. 191, Blk. 3-T..... Top of lime 2,474 ft.; fishing tools 2,530 ft.
Phillips Pet. Co.'s No. 2 Special Sneed..... Drilling 650 ft.
Prairie O. & G. Co.'s No. 2 Sneed, Sec. 26, Blk. 6-T..... Set 5-in. 4,212 ft.; drilling 4,218 ft.
Moore County Oil Co.'s No. 1 Sneed, Sec. 30, Blk. 6-T... Shut down for casing 1,375 ft.
Shadler Bros.' No. 1 John Lowery, Sec. 237, Blk. 44..... Shut down 768 ft.
Prairie and Shamrock's No. 1 Gober, Sec. 16, Blk. M-21. Fishing 1,120 ft.

OCHILTREE COUNTY

W. G. Burton's No. 1 Stickler, Sec. 579, Blk. 43..... Shut down 3,740 ft.
Hamilton et al's No. 1 R. E. Wamble, Sec. 144, Blk. 43 Shut down 250 ft.
McCorkle Pipe Line Co.'s No. 1 R. H. Moore, Sec. 471, Blk. 43 ..... Shut down 1,600 ft.
McCorkle's No. 1 Weinett, Sec. 674, Blk. 43..... Rig.
Standard Dev. Co.'s No. 1 Bowden, Sec. 923, Blk. 43 .... Shut down 900 ft.

OLDHAM COUNTY

Prairie O. & G. Co.'s No. 1 Landergin, SE cor. NE SW. Sec. 46, League 310, Capitol Land ..... Drilling 1,200 ft.

POTTER COUNTY

Greater Amarillo Pet. Co.'s No. 1 Townsite, Sec. 167, Blk. 2, A. B. & M. Sur. ..... Shut down 2,020 ft.
Farmer O. & G. Co.'s No. 1 J. A. Jones, Sec. 3, Blk. 1... Shut down 200 ft.
Kelmey Oil Co.'s No. 1 W. H. Bush, Sec. 19, Blk. 9..... Rig.

RANDALL COUNTY

Patterson et al's No. 1 Campbell & McIlroy, NE cor. Sec. 60, Blk. K-14, T. T. R. R. Sur. ..... Spudded and shut down.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Mrs. H. Ledrick & Sons, Sec. 7, Blk. 5-A ..... Rainbow show oil 4,492 ft. and 4,650 ft.; drilling 4,775 ft. in blue shale with smell of gas.
Gibson Oil Corp.'s No. 1 T. S. Jones, Sec. 109, Blk. C.... Shut down 3,910 ft.
Mercer & Dunbar's No. 1 H. A. Gill, Sec. 127, Blk. M-2. Cellar.
Murphy et al's No. 1 Gill, Sec. 31, Blk. M-2..... Shut down 650 ft.
Chas. Page et al's No. 1 Hamilton Tract 2, Clay County School Land ..... Shut down 440 ft.
Pan-State Oil Co.'s No. 1 A. H. Tandy, Sec. 179, Blk. 42. Rigging up.
Pettijohn et al's No. 1 J. A. Meade, Sec. 29, Blk. 1-B.... Skidded rig 20 ft. west and shut down.
Trammel et al's No. 1 A. H. Tandy, School Land Sur.... Spudded and shut down.

SHERMAN COUNTY

Gibson Oil Co.'s No. 1 Bivins, Sec. 35, Blk. 3-B..... Shut down 850 ft.
Hagy & Harrington's No. 1 S. F. Flores, C SW Sec. 61, Blk. 3-T, T. & N. O. Sur. ..... Location.
Phillips Pet. Co.'s No. 1 Price & Fuqua ..... Location.
Phillips Pet. and Savoy's No. 1 Roach, Sec. 161, Blk. 1-C. 500,000 ft. gas 2,840-2,915 ft hole full water 3,480-85 ft.; more salt water 3,570 ft.; underreaming 5-in.
Whitehead et al's No. 1 Lee Bivins, C SW Sec. 36, Blk. 2, G. H. & H. Sur. ..... Location.

SWISHER COUNTY

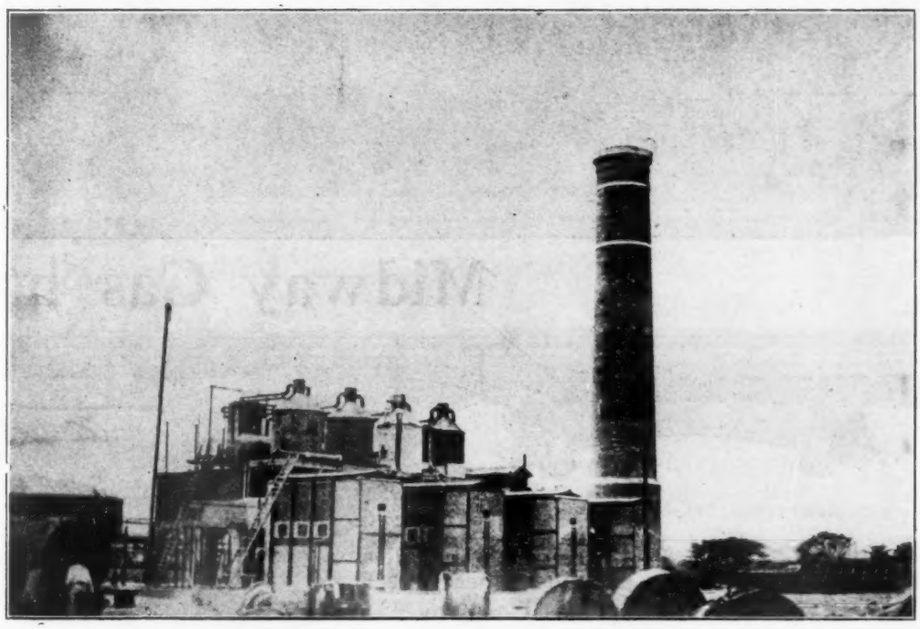
Keagan & Baker's No. 1 Stallings, Sec. 8, Blk. M-13.... Spudded and shut down.
R. H. Miller's No. 1 Todd..... Location.

WHEELER COUNTY

American Ref. Co.'s No. 1 E. E. Carlton, Sec. 29, Blk. 13. Total depth 2,300 ft.; plugged back to 2,029 ft., to shoot.
Angus et al's No. 1 L. C. Burcham, Sec. 91, Blk. 17..... Drilling 1,510 ft.; show gas 1,492 ft.
Angus et al's No. 1 G. A. Morgan, SW cor. SW NE Sec. 93, Blk. 17 ..... Rig on ground.
Boyles & Johnson's No. 1 S. L. Lewis, Sec. 40, Blk. 24.... Rigged up tools and shut down.
Continental Oil Co.'s No. 2 Company, NW cor. SW Sec. 11, Blk. 27 ..... Drilling 1,570 ft.
Continental Oil Co.'s No. 2 J. H. Jackson, SE cor. NE Sec. 11, Blk. 27 ..... Run 8-in. 1,350 ft.
Foster et al's No. 1 S. R. McDonald, SE cor. NW SW. J. N. Lindsay Sur. ..... Spudded and shut down.
Hill, Cook & Riley's No. 1 L. H. Webb, Sec. 61, Blk. 24.. Top lime 2,022 ft.; shut down 2,500 ft., contract depth; will deepen.
Lone Star Gas Co.'s No. 1 J. F. Coates, NE cor. SW Sec. 93, Blk. 27 ..... 1,000,000 ft. gas 1,850 ft.; drilling.
Magnolia Pet. Co.'s No. 1 Laycock, Sec 9, Blk 27..... Run 12-in. 628 ft.
Magnolia Pet. Co.'s No. 1 J. A. Worley, NE cor. Sec. 39, Sec. 42, Blk. 24 ..... Rigging up.
Marland Oil Co.'s No. 1 W. E. Bentley, SW cor. NE Blk. 24 ..... Underreaming 10-in. 1,690 ft.
Marland Oil Co.'s No. 2 W. E. Bentley ..... Rigging up.
Murchison & Fain's No. 1 Close, Sec. 77, Blk. 23..... 10,000,000 ft. gas 1,585-1,610 ft.; shut down.
Piney Oil Co.'s No. 1 J. A. Clark, SW cor. NE SW Sec. 58, Blk. 24 ..... Drilling 1,650 ft.
J. J. Rock Co.'s No. 1 T. C. Jones, Sec. 1, Blk. 34..... Fishing casing 1,300 ft.
J. J. Rook's No. 1 C. W. Porter..... Rigging up.
Wheeler O. & G. Co.'s No. 1 P. J. Sorenson, Sec. 53, Blk. A-4 ..... Spudded and shut down.
Smith, Brady et al's No. 1 P. J. Sorenson, Sec. 53, Blk. A-4. Shut down 1,470 ft. for pipe.
E. L. Woodley, Jr.'s No. 1 Woodley, Sr., Sec. 13, Blk. 5-A.... Water 2,112 ft. and 2,142-44 ft. Total depth 2,164 ft.; cemented 80 ft. of hole.
The Texas Company's No. 1 Bentley..... Rigging up.
Tidal Oil Co.'s No. 1 Bentley, NE cor. E ½ SW Sec. 42, Blk. 24 ..... Spudded.
Upham Gas Co.'s No. 1 R. W. Griswold..... Rigged up and shut down.
Upham Gas Co.'s No. 1 C. George, C W ½ NW NE Sec. 88, Blk. 17 ..... Building rig.

FOSTER

TUBE STILLS



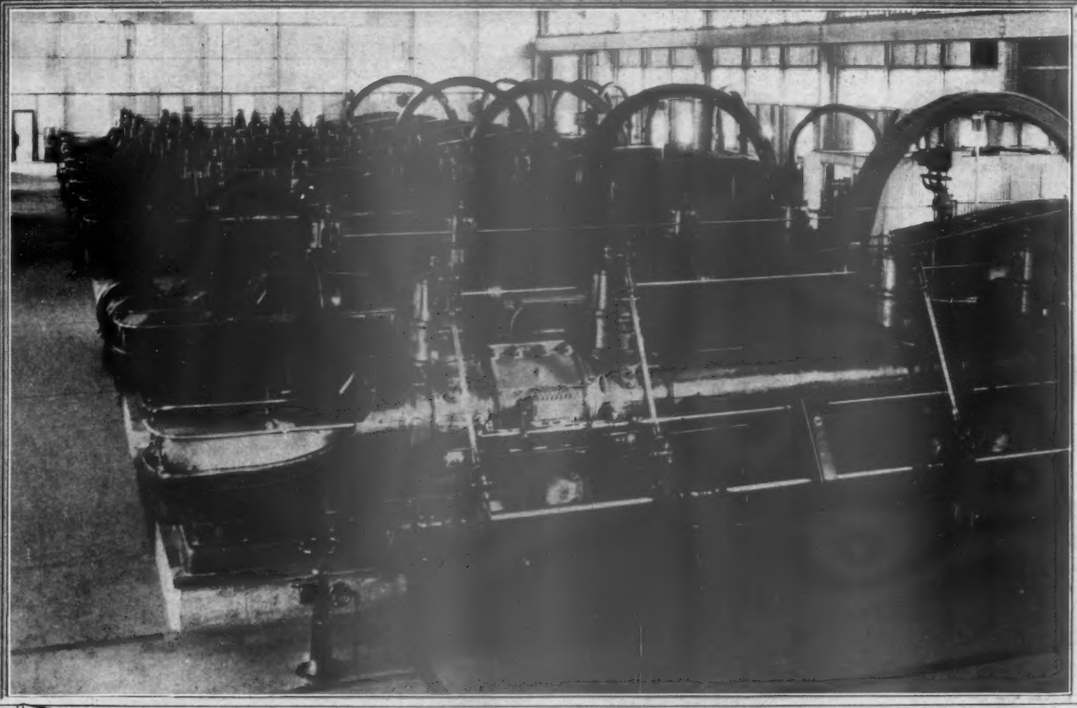
Three Foster Oil Heaters installed at Tampico, April, 1921, and still in continuous operation except for occasional shutdowns for cleaning.

OVER 500 Foster Tube Stills are operating with a high degree of efficiency in topping crude oil, re-running distillates, recovering light oils, continuous distillation, distilling crude coal tar, cracking, producing lubricating stock, preheating cooling oil vapor, heating asphalt, refining vegetable oils, and many other industrial oil heating operations.

POWER SPECIALTY COMPANY

111 Broadway, New York

Branches in All Oil Centers



Midway Gas Company installed their first Cooper Gas engines for direct driving compressors in their Taft, California, plant in 1913. These were 1000 H. P. twin tandem double-acting units. They added additional Cooper units in 1917, 1919 and 1921. The plant now contains four 1000 H. P. twins and three 500 H. P. single units.

Midway Gas has grown up

When the improved Cooper Type-19 double-acting gas engines were announced nearly two years ago, the Midway Gas Company was among the first to place an order for them. They had not even seen a photograph of the new engine. That Cooper was building and guaranteeing it satisfied them. Their first three 760 H. P. units of this type were installed near Ventura, California. The installation is shown at the right. It has been so satisfactory that the Ventura Fuel Company has ordered nine of these same 760 H. P. units for a compressor station near Ventura, California.

This engine is built as a single cylinder 200 H. P.; twin cylinder 400 H. P.; single tandem 380 H. P.; and twin tandem 760 H. P. unit.

THE C. & G. COOPER C
1605 Kirby Bldg , Dallas
439 E. Third St ,

Midway Gas Company's first Ventura, California, compressor station was originally built with twelve Cooper twin Type-80, 170 H. P. compressor units. Two duplicate units have since been added. This company is now operating nearly one hundred of these smaller single-acting Cooper gas engines in Southern California.

up with Cooper Engines

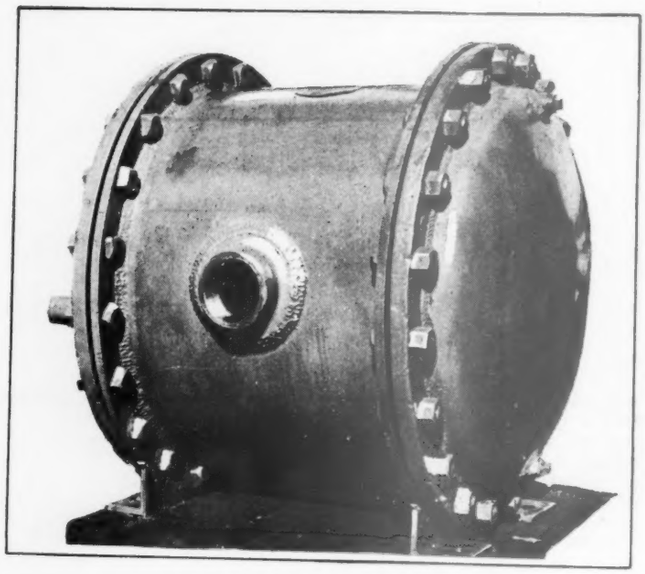
The Midway Gas Company, among the many users of Cooper engines, is in position to speak with the greatest authority. They chose Coopers for their first compressor station in 1913. They have used a few engines of other makes but have stuck pretty close to Cooper equipment ever since.

They have engines representing every stage in the development of the Cooper single-acting Type-80. Since their last plant called for larger units, they chose the Cooper Type-19.

This choice of Cooper engines through all these years has constituted the finest tribute ever paid Cooper equipment and Cooper business policies. Their experience is also largely responsible for the position of respect which Cooper engines enjoy today in the whole California territory.

PANY, Mt. Vernon, Ohio
504 Kennedy Bldg., Tulsa
os Angeles

Southwestern Equipment for Extreme Temperatures and Pressures



New Type Southwestern Pressure Condenser

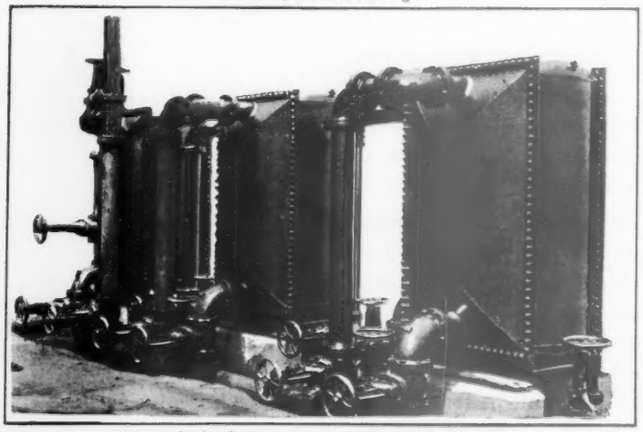
SOUTHWESTERN offers a complete line of condensing and heat exchange apparatus in sizes and materials to meet any industrial operating condition.

This apparatus is manufactured by an organization specializing in the fields of gasoline recovery, refinery construction, metallurgy, and the development of heat exchange, condensing and fractionating equipment for the petroleum refining, chemical and other metallurgical industries.

EQUIPMENT

Condensers	Water Cooling Towers	Separators
Heat Exchangers	Fractionators	Portable Gasoline
Pre-heaters	Bubble Towers	Absorption Plants
Oil Coolers	Absorption Towers	Steam Stills
Gas Coolers	Water Tube Boilers	Mist Extractors
Evaporators	Tube Stills	Rectifiers
Dephlegmators	Fire Stills	Blow Cases

Send for Catalogs



Battery of 3 Southwestern heat exchangers, cooling, refinery residium and heating crude on still charging line.

SOUTHWESTERN ENGINEERING CORP.

1221 HOLLINGSWORTH BLDG.

Los Angeles, Calif.

Branches
90 West Street, N. Y. City
Joplin, Missouri

FACTORIES
CULVER CITY, CAL. TULSA, OKLA.

Branches
Mayo Bldg., Tulsa, Okla
Amarillo, Texas

3818

E. G. SEUBERT NEW PRESIDENT OF INDIANA

(Continued from Page 86)

1926 of $6,814,624, which, of course, does not appear upon our balance sheet.

The Dixie Oil Co., a subsidiary producing company, owned 100 per cent by the Standard Oil Co. of Indiana, justified our faith in its future with earnings after taxes of $1,562,812, and while it paid no dividends, it has begun paying back money loaned it by this company for the purpose of development.

The Sinclair Pipe Line Co., in which the Standard Oil Co. of Indiana has a 50 per cent interest, had earnings, after taxes for the year 1926 of $3,898,221. Our company's share of this amounted to $1,949,110, only a substantial part of which is included in our balance sheet through dividends received.

The Sinclair Crude Oil Purchasing Co., in which we have a 50 per cent interest, has a large investment in the storage of crude oil in the Mid Continent and Wyoming fields, the profit and loss on which will not be determined until the oil has been disposed of.

Our associate, the Pan American Petroleum & Transport Co., reports the best year in its history under a management which we assisted in nominating, and from its 1926 earnings this company received dividends and possesses an equity in those still undivided.

POLICE POWER STATED BY SUPREME COURT

(Continued from Page 40)

The emergency may arise through the failure of the oil industry to take steps to protect itself from destruction by its own members. Waste will not be tolerated, if that waste reaches the point that it threatens public safety.

Though in its essence, and though under present conditions, the net for the feet of every producer may not be spread, still, as the court indicates, if a great public emergency exists, the State may take over businesses not ordinarily impressed with a public interest.

But the emergency must be real; and the fact that propaganda may be used is clearly recognized by the court, which in quoting from a prior case (244 U. S. 590) distinctly declares that it will take into consideration whether the emergency is real or fictitious: After remarking that any business offers opportunity for abuses, it says, "But this is not enough to justify destruction of one's right to follow a distinctly useful calling in an upright way.....Skillfully directed agitation might also bring about apparent condemnation of any business by the public. Happily for all, the fundamental guaranties of the Constitution cannot be freely submerged if and whenever some ostensible justification is advanced and the police power invoked."

In that last statement is the same statement of the broad rule under which the Supreme Court construes the police power. Not by skillfull propaganda; not by the definition of legislatures; not even by an apparent justification for stringent legislation is the power to be invoked. But only by the actual condition, and the real facts that lie back of all the agitation, and all the propaganda.

The basic interpretation of the protection of the Fourteenth Amendment seems to be a return to the idea that obtained prior to the decision of Justice Holmes, 16 years ago in the Oklahoma Bank Guarantee case. In that case (219 U. S. 104) the court said, without dissent: "It may be said that the police power extends to all the great public needs. It may be put forth in aid of what is sanctioned by usage, or held by the prevailing morality or strong and preponderant opinion to be greatly and immediately necessary to the public welfare."

As the public opinion is most strongly evidenced by an act of the legislature, that opinion has been held to intimate that the Legislature was practically supreme. And that the present opinion in the Tyson case is a departure from the Oklahoma Bank Guarantee doctrine, is evident from the fact that Justice Holmes now dissents, and in his dissenting opinion says: "The truth seems to me to be that, subject to compensation when compensation is due, the legislature may forbid or restrict any business when it has a sufficient force of public opinion behind it."

Two other justices, Stone and Stanford dissent; but on the ground stated by Justice Holmes: their dissent is based not on the ground that temporary public opinion should control, but that changing times may invest business with public interest; and in their opinion the brokerage business under consideration was so invested.

If one may gather the mind of the court from the prevailing and the dissenting opinions, it is that the doctrine that the legislature may by its declaration extend the police power is abandoned; but that the validity of the exercise will depend on the determination of the courts in each case, if the public interest is involved.

GASOLINES SHOW WEAK TREND ON WEST COAST

LOS ANGELES, Calif., March 5.—The reduction in gasoline prices during the past week east of the Rocky Mountains has made itself felt on the California market. Instead of the optimistic feeling which was evident during the past few weeks that gasoline prices on the Pacific Coast would be advanced in the not too distant future, there is now a feeling that the present price schedule is not too firm and that there is a possibility of a reduction in this territory also. More rainy weather with its effect of decreasing consumption has tended to make marketers even more pessimistic.

Figures just released by the United States Bureau of Mines covering operations during January show that gasoline production continues to increase. January's output was 148,567 bbls. more than December's, the total produced in January being just under 5,000,000 bbls. Consumption did not keep pace with production and stocks of gasoline increased during the month by 1,696,219 bbls. which made a total storage at the end of January of 12,292,559 bbls. The industry is looking for very heavy demand for U. S. Motor gasoline during the coming months and are not particularly alarmed over the material increase in stocks of gasoline during the past two or three months.

Natural Gasolines Weak

A study of the statistical position of natural gasoline soon shows why this commodity has weakened so decidedly during the past few months. Production of natural gasoline during January was at the rate of 418 bbls. per day greater than during December. During January, recovery of 40,323,680 gallons of natural gasoline was reported to the United States Bureau of Mines. During the same month, consumption also increased but not nearly in proportion as did production and there was 1,620 bbls. less per day consumed than produced during the month. At the end of the month, stocks of natural gasoline amounted to 368,635 bbls. which is the greatest volume of this commodity that has been on hand at California refineries and natural gasoline plants for over a year. This stock at the present rate of consumption is approximately twelve and one-half days supply.

Exports to the Atlantic Seaboard during the past week held up very well. A total of 872,543 bbls. was consumed in this trade, made up of 183,307 bbls. of crude, 460,254 bbls. of fuel oil, 152,140 bbls of gas oil and 76,842 bbls. of gasoline. During the same period only 100,000 bbls. of fuel oil were shipped to Atlantic foreign ports. Here again can be seen the effect of the shortage of tank bottoms. It is evident, however, that California is yet a factor in national and world markets and price changes in the East are seriously felt here.

"The corrosion dragon is dead"

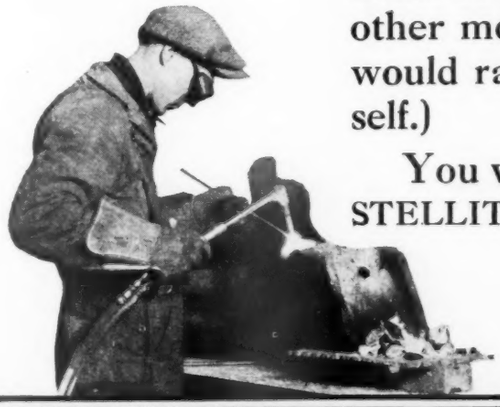
FOR a number of years the dragon of corrosion and the demon of abrasion and a lot of other industrial pests have been "killed" and eliminated.

Yet they always seem to come back again.

Now Stelliting (which means, by the way, covering a metal surface with a layer of Haynes Stellite) will not do the impossible, but it will surprise you. Every time it has been tried it has increased the life of the metal part from three to twelve times.

The reason for this is that Haynes Stellite is an alloy of chromium, cobalt and tungsten. You don't have to know much metallurgy to know that that is a good start. It resists abrasion better than any other metal. (We can prove that, but we would rather have you prove it to yourself.)

You will be interested in our booklet—
STELLITING METAL PARTS.



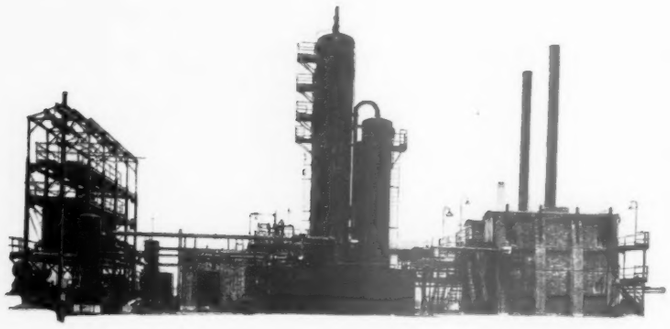
HAYNES STELLITE COMPANY
Unit of Union Carbide and Carbon Corporation
KOKOMO, INDIANA

District Sales Offices: Carbide and Carbon Building, 30 East 42d Street, New York; Peoples Gas Building, Chicago; Keith Building, Cleveland; General Motors Building, Detroit; 114 Sansome Street, San Francisco; 1310 Santee Street, Los Angeles.

Stelliting with

HAYNES STELLITE

SIL-O-CEL
HEAT INSULATION



In the Argentine

THE above cracking plant was built for the Argentine Government Oil Refinery at La Plata, Argentine. These Cross Cracking Units were built by the Bethlehem Steel Company, and the plant was designed by the C. B. Roberts Engineering Company of Bethlehem, Pennsylvania and New York City.

Sil-O-Cel C-22 Brick were used to insulate the base, side and end walls of the furnace, and Sil-O-Cel Plastic Cement and block to insulate the reaction chambers, towers and large pipe lines.

Whatever the job to be done, and wherever it is to be done . . . . Sil-O-Cel insulation best meets the demands for economy and efficiency. Sil-O-Cel is used by the leaders in every industry because it is a good investment that pays fuel saving dividends, year after year.

Complete recommendations for the insulation of any type of equipment will be gladly sent on request. Write nearest Division office shown below.

CELITE PRODUCTS COMPANY

NEW YORK 11 BROADWAY
LOS ANGELES 1320 SO HOPE ST
CHICAGO · 53 W JACKSON BLVD
SAN FRANCISCO · 140 SPEAR ST
OFFICES AND WAREHOUSES IN PRINCIPAL CITIES

CELITE PRODUCTS LIMITED
NEW BIRKS BUILDING
MONTREAL · QUEBEC

CELITE PRODUCTS CORPORATION
147 WINDSOR HOUSE-WESTMINSTER
LONDON · ENGLAND

EASTERN FIELDS

(Continued from Page 68)

second test on the Littlepage-Gardner farm, a gasser good for 750,000 feet. On Buff Lick Run, same district, the same company's has a light gasser in the salt sand at No. 3 on the same farm.

Fair Pumper in Wirt County

In Spring Creek district, Wirt County, the Federal Oil & Gas Co. has completed No. 36 on the Roberts, Pell & Newman tract. It produced 18 bbls. the first 24 hours after drilled into the salt sand. In Geary district, Roane County, the United Fuel Gas Co. has completed in the Big Injun said a second test on the B. A. Shamlin farm. It is located on left fork, of Sandy Creek and is a fair gasser.

In Lubeck district, Wood County, Park Bowser has completed a test on the Patrick Doyle farm. It is dry in the Berea grit and has been abandoned. In Mannington district, Marion County, the Carnegie Natural Gas Co.'s test on the Isaac Hibbs farm is showing for a producer in the 30-foot sand.

Gasser in Barbour County

In Union district, Barbour County, the Grasselli Chemical Co.'s test on the W. Lee Morris farm is a gasser in the Benson sand. The Benson sand is the deepest producing formation in West Virginia. The wells are not large but show good staying qualities.

Ritchie County

The Hope Natural Gas Co.'s test on the M. F. Snodgrass farm, in Murphy district, Ritchie County, is a gasser in the Big Injun sand. In the same district, the same company's test on the D. M. Miller farm is a gasser in the same formation.

Starting Test Wells

On Maggoty Run, Liberty district, Marshall County, the Manufacturers Light & Heat Co. has the rig completed for a second test on the R. A. Marple farm. On Laurel Run, same district, the same company is starting another test on the Louisa A. & E. C. Pyles farm. In Geary district, Roane County, the United Fuel Gas Co. has part of the rig material at a location on the O. D. Stockly farm. In Battelle district, Monongalia County, the Randall Gas Co. is fishing for collapsed casing on the J. C. Stiles farm. Liberty district, Marshall County, the Cameron Light & Heat Co. has shut down at 2,724 feet on the J. W. Quigley farm. In the same district, the Carnegie Natural Gas Co. has a rig completed on the S. N. Cole farm. In Washington district, the Philadelphia Co. is fishing at 3,060 feet on the T. J. Huffman farm. In Church district, Wetzel County, Null & Ritchie are fishing at 1,325 feet on the Thomas Phillips farm.

In Center district, Gilmer County, Guy Zinn and others have started to drill a test on the M. J. Cunningham farm. In Harper district, Roane County, Simms & Co. have started to drill on the S. M. Curry farm. In Center district, Gilmer County, the Carnegie Natural Gas Co. is rigging up on the James R. Rhodes farm. In Carroll district, Lincoln County, Lockwood & Burns have a rig up on the Preston Bird farm.

In Sheridan district Lincoln County, G. T. Ray & Son have placed a drilling machine at a location on the Sidney Adkins farm. In Jefferson district, the Cambridge Gas Co. has started to drill on the Columbus Carnes farm. In McClelland district, Doddridge County, the Manufacturers Light & Heat Co. has rig material at a location on the Josephine Boyce farm. In Reedy district, Roane County, the Heck Oil Co. is rigging up on the A. D. Tallman farm. In Walton district, Roane County, the United Fuel Gas Co. is due in the sand on the John Cromwell farm. On Polecat Run, Elk district, Kanawha County, the South Penn Oil Co. is building the rig to clean out old No. 6 on the Bannister heirs' farm. If the result proves satisfactory a number of old wells on this farm will be given the same treatment.

Southeast Ohio

In the shallow sand territory, Section 33, Pleasant Township, the Allegheny Oil Co. completed in the Berea grit No. 16 on the Elizabeth Barrisford farm. It got no oil and will be abandoned.

In Section 32, Independence Township, Washington County, Buchanan & Wise completed No. 36 on the John & Louisa Mendenhall farm. It is a light pumper in the Meeker sand. In Section 8, Cambridge Township, Guernsey County, the Wittmer property, trustee, has made the location for No. 3 on the John Taylor farm.

Licking County

In the northeast quarter of Section 2, Fallsbury Township, Licking County, the Margaret Oil Co. has completed a test on the R. A. Rinehart farm good for 10 bbls. a day in the Berea grit.

In the southwest quarter of Section 21, Jackson Township, Knox County, Arkansas Fuel Oil Co.'s No. 4 on the Harry R. Hall farm is good for 7 bbls. a day in the Berea grit.

Duster in Muskingum County

In the southwest quarter of Section 7, Hopewell Township, Muskingum County, the Pure Oil Co.'s second test on the J. P. Harkness farm is dry in the Clinton sand. In Section 24, Washington Township, Monroe County, the Gold Crown Oil & Gas Co. is drilling another test on the Francis Dillon farm.

Southwest Pennsylvania

In Robinson Township, Allegheny County, M. Clever has drilled No. 3 on his own farm through the fifth sand and dry. In Perry Township, Greene County, the Carnegie Natural Gas Co.'s test on the Alice C. Henderson farm is in the gas sand and good for 2,000,000 feet. In Whitely Township, the same company's test on the C. J. Morris farm is dry in all sands and abandoned. In Dunkard Township, the Jeannette Oil & Gas Co.'s test on the John Ross farm is a fair gasser in the salt sand.

In Richhill Township, Greene County, Wasmuth, Kellihan & Co. have a gasser in the Gordon sand at a second test on the John Braddock farm. In Washington district, the Manufacturers Light & Heat Co.'s second test on the H. R. Fonner farm is a gasser in the same formation.

KENTUCKY-TENNESSEE

(Continued from Page 70)

ties, District 25, the Reno Oil Co.'s No. 13, on the John N. Conley farm, is a 10-bbl. pumper. In District 27, the Model Oil Co.'s No. 3 Frank Peters farm, a 2-bbl. pumper. Hudson & Collins' No. 15 Oscar Wheeler farm, District 29, is a 2-bbl. pumper. In District 30, George & Touma's No. 8 L. D. Holbrook farm, 3 bbls., and in District 31, the Model Oil Co. has a duster at No. 6 on the Jess Adams farm.

In District 21, Floyd-Knott Counties, the United Carbon Black Co. drilled in a gas well estimated at better than 2,000,000 feet, in a test on the Charley Vanderpool farm.

A test drilled by Tom Hays and others on the Charley Shannon farm, District 11, in Lawrence-Johnson Counties, North Weir Field, proved a dry hole.

In District 8, Estill County, the Wood Oil Co.'s second well, on the S. M. Maple farm, is a 3-bbl. shallow sand producer.

In District 20, Lee-Owsley Counties, August Girard's test, on the I. S. Bush farm, is a light producer, around 2 bbls.

Western Division

Just at this period the western division is showing a much more prolific production from newly-drilled wells than is the eastern division, especially in the new Ambrose Pool, of Ohio County. Barren County is another spot that remains active regardless of the bad weather conditions that have prevailed for four months. Cumberland County is another spot that attracts much attention, especially in the Crocus Creek district not farm from Hopewell Church. This field has a heavy production from the shallow sands and owing to the inability to keep storage to hold the oil, work is not brisk. This field has not yet been given a good test as to the real value of the wells and during January only close to 8,000 bbls. were handled from the Hopewell area. A dry hole is reported

Smith's Bronze Sucker Rod Guide

Rivets (2) for fastening wedge in place which, with set screw (4), afford ample safety—but these are augmented by lugs (1) which may be burred over and grooves (3) which may be calked for further protection. Set screw is put in from rod side thread halfway and can not come out.

for Greatest Adaptability!

Works anywhere on the rod
No Disconnecting—Saves Rods, Couplings and Tubing

Read what three of our users say

The Texas Company

Corsicana, Texas, Jan. 14, 1927.

TO WHOM IT MAY CONCERN:

This is to certify that the SMITH BRONZE SUCKER ROD GUIDE has been used by this organization in the Mexia, Powell and Wortham Fields, since it was first placed on the market and has given satisfaction in all instances up to this date.

Very truly yours,

FLH-FPM F. L. HUGUS.
District Superintendent
Mexia District.

Gulf Production Company
Corsicana, Texas, Jan. 18, 1927.

Mr. W. C. Smith,
Corsicana, Texas
Dear Sir:

In response to your inquiry as to what results we have obtained after using the Smith Bronze Rod Guide over a period of eight months, am pleased to state that we are very well pleased with results obtained. as it has practically eliminated tubing splitting or rods rubbing in any way.

We have experienced no trouble whatever with guides coming off or losing off, in any way, therefore, we have had no rods to hang up while pulling same.

A good feature of the guide is that you can place same on the rod at any point desired, while we use them just above the coupling.

So far, we have not had to replace any installed.

After our success with these guides, we can highly recommend this guide to anyone having tubing or rod trouble.

Very truly yours,
W. H. TAYLOR,
District Superintendent

WHT-c

Humble Oil & Refining Company
Houston, Texas
Corsicana, Texas,
Jan. 20, 1927.

TO WHOM IT MAY CONCERN:

This is to advise that we have been using the Smith Bronze Rod Guides for a period of about six months. To date we have used approximately 3500 guides which have given perfect results in every respect and I feel safe in saying that I can recommend these rod guides to anyone needing it is simple and gives a product of its kind, perfect satisfaction wherever it is used.

HUMBLE OIL & REFINING COMPANY.
By R. W. Richmond.
RWR-F

Manufactured and Guaranteed By

OIL CITY IRON WORKS
CORSICANA TEXAS

Literature on Request

Attention to small matters . .

AJAX ENGINES

Few men in the field have any idea of the details that have to be watched in building an engine to give the performance of the Ajax and Ideal Ajax.

In making the Ideal Twin we consider not only the thousand and one problems of foundry, forge, machine shop and assembling, but the numberless other questions that come up from the use of the engine in the field.

We must determine in advance how each part will act under the strain and abuse of oil country operations. We are reminded that the engine does not work by itself, but must co-operate with the other items of equipment in rotary drilling. We must produce a source of power to serve the last demand you make upon it. How well we have succeeded you can learn from the nearest man who uses one. He is not far away.

Made by

AJAX IRON WORKS
Corry, Pa.

Distributed by
NATIONAL SUPPLY COMPANIES
In every oil field

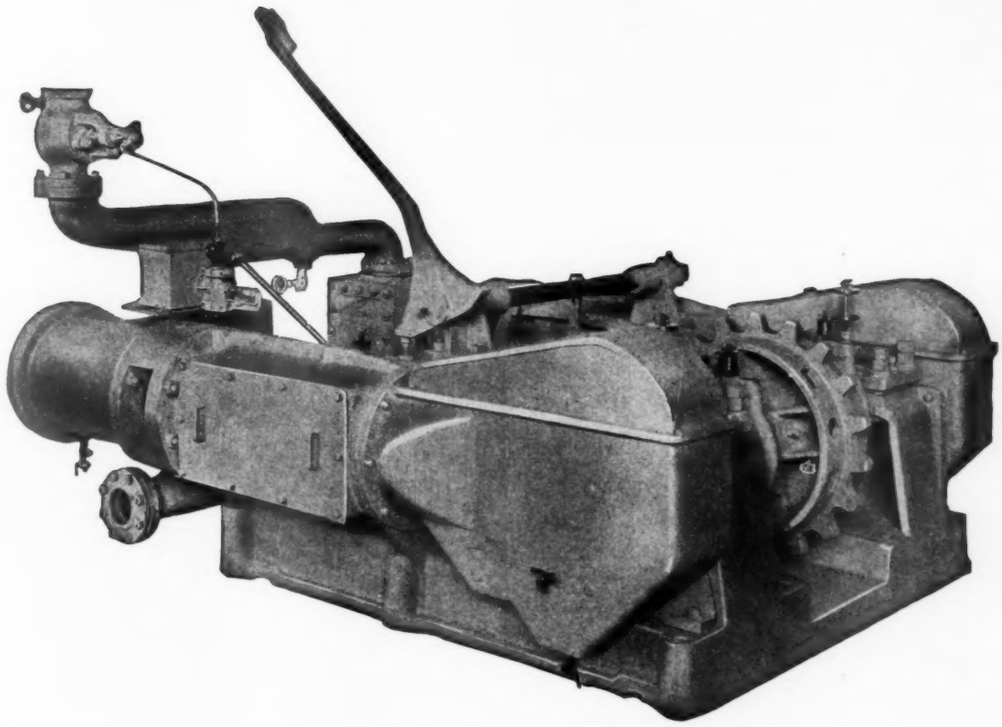
AJAX Snap Shots

5,488 ft. well near Syracuse, Kansas. Drilled by W. S. McCray of Tulsa, Okla., with 12x12 single Cylinder Ajax Engine.

IDEAL DRILLING

. . . . . makes the IDEAL . . .

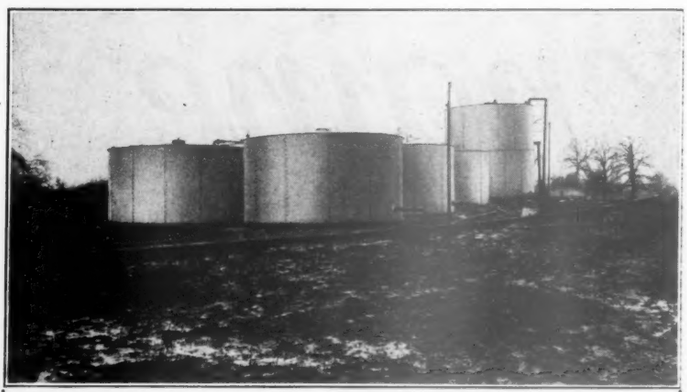
a great engine



10x10 IDEAL AJAX
now made with
Enclosed Crank Case

The great success of the 12x12 Enclosed Type engine has led to the production of the smaller model. The new engine is not just a smaller copy of the 12x12 but an original design that introduces important refinements.

AJAX ENGINES



1 500-Bbl. Special Flow Tank, and 6 250-Bbl. Maloneys Recently Installed for Savoy Oil Co. at Oakhurst.

EASILY TAKEN DOWN AND RE-SET

MALONEYS are ideal for meeting fluctuating tankage needs, because they are easily taken down, shipped or hauled, and re-set, by unskilled labor. The exceptional ease with which they are erected and dismantled is the result of careful standardization, which renders parts interchangeable, and of the Maloney patented "crimp" at seams and joints, which causes parts to fit with hairline accuracy.

MALONEYS are constructed of rust-resisting Keystone Copper Steel, the most durable sheet steel known. Seams are strongly reinforced with steel channels and strips. Cleaning-out plates are set flush with bottoms. The best of deck equipment is used.

"Alone in Quality"

MALONEY TANK MFG. COMPANY
Tulsa, Okla., U. S. A.
Distributors at All Principal Petroleum Points.

Sizes: 12 to 3,000 Barrels.

Packed in Steel-Bound Crates for Export

Howell Aluminum "3-in-1" Vacuum Pressure Valve and Thief-Hatch—The BEST and LATEST Deck Equipment—POSITIVE Safety.

MADE OF KEYSTONE COPPER STEEL

MALONEY PATENTED BOLTED COPPER-STEEL TANKS

MADE OF KEYSTONE COPPER STEEL

MALONEY
ALONE!

in the Crocus Creek district, being J. F. Bolinger's No. 1 on the John Sharp farm, a little in advance of production and which was drilled to a total depth of 875 feet.

Ohio County

The area of big producers is found in Ohio County and the coming summer should see a larger increase in production, the Ambrose Pool being the spot that is more closely watched than any other section of Kentucky. In this pool, Julius C. Miller's No. 3 well, 125 feet from the north line and 1,200 feet from the east line of the Ambrose heirs' 14 acres, is a 150-bbl. initial producer at a total depth of 629 feet after given a 110-quart shot. In this well a string of 575 feet of casing was set; top of the sand was at 575 feet and bottom at 615 feet and with the pocket below makes the total depth of the hole as given.

The Rex-Pyramid Oil Co.'s second well, 125 feet from the south line and 500 feet from the east line of the W. Scott Ambrose farm, west of the Ambrose heirs' farm and adjoining the J. R. Weller farm to the north, proved to be a 40-bbl. initial producer. No. 1, on the farm and between production, proved a duster. No. 2 was cased at 632 feet, 2 feet in the sand, which was topped at 630 feet and bottom of sand at 674 feet, and drilled to a total depth of 703 feet and given a 110-quart shot. No. 3 will be started at once, as will No. 4 on the Ambrose heirs' farm.

South of the two Ambrose farms is the John R. Weller 110 acres, and one of the rich oil spots of the county. James C. Ellis, the owner, has just brought in his fifth successful producer on the lease which is also a 150-bbl. initial producer. In this well a string of 616 feet of casing was set. Sand was topped at 616 feet and bottom of the hole at 666 feet, where it was given a 140-quart shot. No. 5 is 125 feet from the north line and 800 feet from the west line of the 110-acre tract. No. 6 is drilling, and No. 7 will soon start.

In the Swope Pool, the Chicago Petroleum Syndicate is drilling No. 13 on the Guenther-Gant farm, of 134 acres.

In the King Pool, between the Panther Creek Church settlement and Laffoon, and west of the Midkiff Pool, the Creek Drilling Co.'s wildcat, on the D. Westerfield farm, adjoining the King farm to the southeast and south of Whitesville, proved a duster at a total depth of 985 feet. The location is in the southeast corner of the farm, not far from the Mosley School.

The bringing in of a dry hole by the Leeper Oil Co. in No. 5 on the J. S. Colyer 100 acres, came as a surprise as No. 4, recently completed, proved to be a 100-bbl. producer.

Barren County

Several small producers were found in the Glasgow Field of Barren County. In the Gorby Pool, J. W. Porters' No. 4, on the M. Y. Chamberlain farm, is a 9-bbl. well at a depth of 384 feet.

In the Emery-Moore Pool, Breeding and Jones have a 7-bbl. pumper at No. 6 on the Deckard farm, and drilling No. 1, same farm, as well as No. 1 on the Howard farm.

Lew J. Emery, Jr., Sons Co. appears to have settled the lease question and will drill the deep test on the Button farm, in the Button Pool, which will be drilled to a depth of 3,500 feet unless good commercial production is found at a lesser depth. Work will start as soon as weather conditions will permit .

In the Lecta Pool, southeast of Glasgow, Sanson, Norris Brothers and others struck a duster at a second test on the Browning farm, upon which a nice producer was secured in the No. 1. No. 3 is under way, as a dry hole appears to cut little figure anywhere in this county. Norris Brothers and Harrington drilled a test on the C. B. Jones farm, getting a 6-bbl. pumper. Ziegler Brothers' No. 2 John Dean farm, is a 3-bbl. well, while No. 3 shows for only 2 bbls. at 475 feet.

Warren County

There is quite an improvement noticeable in new work in the Bowling Green Field of Warren County, as considerable drilling is being done in the vicinity of Alvaton, about 11 miles east of Bowling Green. Only two completions are reported from this county the past week. West of Bowling Green, in District 6, E. H. Fuller's No. 5 well, 600 feet from the south line and 800 feet from the east line of the Cooper Morgan farm, got the pay at 1,282 feet and after being shot produced 20 bbls. the first 24 hours. In the same district, Onsel Brothers and others' No. 13 well, 1,200 feet from the south line and 1,000 feet from the east line of the C. G. Davenport No. 2 farm, produced 5 bbls. the first 24 hours at a depth of 1,050 feet. No. 14 will be started at once, as will No. 6 on the Cooper Morgan lease of E. H. Fuller.

T. A. Sheridan is drilling No. 7 on the Georgie Ann Davenport farm, District 4. Johnson & Julian are drilling No. 11 on the J. L. Jenkins 393 acres. R. B. Walker is drilling No. 1 Rebecca Russell farm; No. 1 John Larmon farm and No. 1 John Crosby farm, all three in the Alvaton area. Lincoln Oil Producing Co. is drilling No. 1 S. E. Tinsley farm, same district.

In District 5, Gus New and others are drilling a test on the Rafert Wolthall farm. A. B. Hudson, attorney, is drilling No. 3 James Dethridge farm. John Boyd, his No. 4 Ed L. Covington farm, and the Zickers Drilling Co. is drilling No. 1 W. L. Bryant farm.

Allen County

In District 1, Scottsville Field, of Allen County, Z. Bonner's No. 17, on the T. K. Brown farm, is rated good for 3 bbls. at 296 feet.

In District 2, Charles Karnes drilled a dry hole at No. 1, on the Lank Stovall farm.

Clinton County

The finding of a new pay sand in Clinton County, Kentucky, means a revival of greater activities in this county which has never been given a real testing. The new sand is the Beaver in which the long-lived production of the Monticello Field of Wayne County gets its oil and wells have been producing in Wayne County for close to 40 years. Clinton County lies between Cumberland and Wayne Counties and along the Kentucky-Tennessee border, north of Scott County, Tennessee.

S. V. Brentz, an attorney at Albany, the county seat of Clinton County, writes an interesting letter as follows:

"A recent oil strike in the southeastern corner of Clinton County by local operators gives promise of the opening of a new Beaver sand pool in this county. The new well is located on the Louis Wright farm, east of Rolan post office, which is owned by the Citizens Bank of Albany, and is about one-half mile from the Wayne County line and about 2 miles from the Tennessee State line. The location is on the side of a mountain about midway between the crest and the creek level, and starts about 1,000 feet above sea level. The Beaver sand was encountered at 695 to 713 feet, being 18 feet thick. The sand was reached at night and the gas became so strong the driller shut down until daylight because of danger of fire. The well was drilled in and given a light shot, after which it easily bailed several barrels in a day without lowering the fluid in the hole to any extent. The driller says it is sure to make a 10-bbl. pumper and possibly twice that.

"The owners of this well are convinced they are on a real oil structure but believe this well is comparatively low on the structure and that much larger producers will be found a few locations in advance. This well is near the old Wayne County fields which have been notable for 20 years for their consistent production from the Beaver formation. It is claimed by experienced Wayne County operators that a Beaver sand well with only a rainbow will make a good pumper when shot. The Wright farm well would have made a light pumper without a shot and Tom Hicks, the driller who has drilled many wells in Wayne County, thinks this is a real find.

"The Wright farm well is owned by J. A. Flowers, Sherman Flowers, S. G. Smith, G. R. Dodson and Tom Koger, of Albany, who have been doing wildcat-

TNEMEC
No. 86

Hot Surface PAINT

Substantial stocks of this superior hot surface paint are carried at all Continental stores.

When you need hot surface paint why not tell the Continental salesman and have him send or bring it out to you?

No. 86 Tnemec Hot Surface Paint is quickly and easily applied. It comes in a package ready for use; no thinning required. Can be applied on a hot or cold surface and dries to a glossy, enamel-like finish. Made in black only. By all odds the most popular hot-surface paint in the oil territory.

"If CONTINENTAL Sells It, There Is No Better"

THE CONTINENTAL SUPPLY COMPANY
General Offices: St. Louis

Export Office: 2 Rector St., New York
London Office: 216-217 Dashwood House, Old Broad St., London, E. C. 2

CONTINENTAL

Here's a line that has seen hard service at Bowden, Oklahoma. H. W. Billinger, Driller and A. B. Tuttle, Tooldresser says: "It's Ten months old and as good as new."

We maintain that

WILLIAMSPORT WIRE LINES

Telfax Tape Marked — Factory Certified

in the hands of good conscientious men will prove to be the best wire line investment that can be made.
We extend our compliments to these boys for the manner in which they handle their lines.

Williamsport Wire Rope Company

Main Office and Works: Williamsport, Pa.

General Sales Offices:
122 S. Michigan Ave., Chicago, Ill.
Oil Country Sales Offices:
Williamsport Bldg., 4th and Midland Valley Tracks, Tulsa, Okla.

Distributors

Houston Mildred Shidler Blackwell Ardmore Holdenville Bristow Wichita Falls Bartlesville
Smackover Arkansas City Cromwell Shreveport Casper Lewistown Electra

ting in Clinton and Wayne Counties for several years, with more persistence than success, and they are very much encouraged over the outlook for this well. They control 1,500 acres of leases surrounding the well. The Cumberland pipe line extends to within about 3 miles of the new strike, terminating at the Dry Hollow Pool, in Wayne County.

"Several years ago Frank B. Russell an associates of Louisville, Ky., drilled a deep test on the Tom Kogar farm, about 400 yards from the new strike. Russell's well was pronounced dry at 2,000 feet and abandoned, but when the casing was pulled it was found a large quantity of oil had seeped in around the casing from the Beaver sand. The Wright and Koger farms are 1 mile up the creek and east from the old Beech Bottom Pool, which attracted wide but brief attention seven years ago by producing oil from the Knox dolomite at 1,900 feet, said to be the lowest producing stratum in Kentucky. Knox dolomite wells also were developed near Travisville, Tenn., a few miles south. This horizon appears to be somewhat deeper than the sands which are producing extensively from various depths below the Pencil Cave in Cumberland County, Kentucky, and Clay County, Tennessee. It is predicted that the Knox dolomite will be heard from again in the more thorough testing which is expected to take place throughout this section of Kentucky and Tennessee in the next few years.

Southwest Clinton County

"There is a temporary lull in operations in southwestern Clinton County and the adjacent corners of Cumberland Clay and Pickett Counties, which form the Lillydale or Wolf River district of the Kentucky and Tennessee fields. This is due to the excessive amount of wet and cold weather and the frequent high waters which have characterized this winter. But many operators are preparing for an active development campaign as soon as weather conditions permit and 1927 will undoubtedly be the most active year in the history of oil operations in these counties.

"The Sells Oil & Gas Co. of Pittsburgh, got only a small show of oil and some gas in its initial try on the Mrs. M. A. Pierce farm, a wildcat located 2 miles north of the Fanny's Creek Pool, but probably make another attempt in the early spring, as the structural features on and near this lease are very promising. Four of the Mutual Oil & Coal Co.'s six wells on Fanny's Creek are pumping at a steady and profitable rate. One of the Clinton Oil Co.'s two wells on the Upchurch farm, Lillydale Pool, is producing nicely. McClintock, Reed and Heckathorn have three good settled pumpers out of the five holes they have drilled on the Pierce Brothers' farm. The Mutual's well, on the Guthrie farm on Wolf River which was reported a failure had a good showing of oil before it was shot and is believed to have been shot too heavily. The dry hole drilled by Dulaney, Sells and Ewing, on the Shipley farm, proved to be in a syncline. From this it appears that the wells drilled in this district the past two years, though largely wildcats, have been more than 50 per cent productive and are holding up well.

"Bryson and Stinson, oil operators from Oklahoma, have leased the Ansalom Phillips farm of 300 acres, near the Upchurch and Pierce wells and will begin drilling in the near future. Twenty years ago the New Domain Oil & Gas Co. drilled a well on this farm which made a lot of oil and gas.

"The Jouett's Creek Pool, on the old Harrison farm, 4 miles up Obey River to the south of Lillydale, appears to be one of the most active spots in Clay County, Tennessee, at present. Among the active operators in this pool are Bryson and Stinson, of Oklahoma; Drs. E. W. Clark and Bart Dalton and associates, and J. S. Owens, of Cameron, Tex., and associates. Perhaps the best well is No. 1 on the B. C. Arney farm. No. 2, same farm, is drilling. No. 1 Luther Martin, being drilled by Bryson & Stinson, is due in. There is one producer on the Mrs. Mary Harrison land and one failure was drilled on the Harrison Hurd farm. The Paragon Development Co.'s pipe line has been extended from the Upchurch farm in Clinton County to the Jouett's Creek Pool, and much new drilling is predicted during the early summer months. The drilling is quite shallow, in some wells being less than 200 feet."

Tennessee Activities

A number of new drilling rigs are being moved into Clay County and that part of Tennessee will be one of the busy spots as soon as weather conditions will allow the transporting and setting of the machines. Pickett and Overton Counties are also in for a more thorough testing than ever, while considerable leasing is being done in Fentress, Scott, Morgan, Putnam and Jackson Counties, as well as in Macon County to the west.

In Macon County, which is south of Allen County, Kentucky, there are some pronounced structures, also in the western portion of Clay County, which adjoins Macon on the east and along the Tennessee-Kentucky State line. Little, if any, drilling worth while has been done in the more western part of Clay County or the eastern part of Macon County. Structures are now being mapped out by geologists of some of the large companies, near Hermitage Springs, or what is known as Spivey, in western Clay County, and along Long Fork Creek, 6 miles west of Red Boiling Springs in Macon County, and several tests are expected to be started in that area within the next three months or so. These domes are probably on the northwestern slope of the great Cincinnati Arch, the same as Allen and Warren County Fields, but the Allen County sands are still absent at both these places, so one must expect the Upper and Lower Sunnybrooks and the Upper and Lower Tinsley Bottom pays to be the producing horizons. The nearness to machine shops and supply stores in Allen and Warren Counties will be quite an advantage over the Celina district, added to which is their accessibility on a fine state-maintained highway.

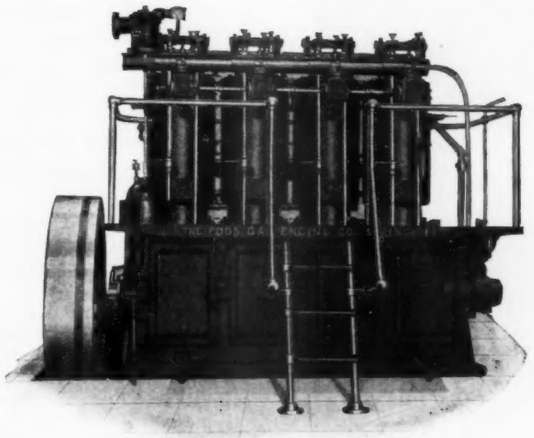
North and west of the Red Boiling Springs in Macon County, many years ago a well was drilled to a depth of but 90 feet and considered no good. Some eight years ago when the writer, on one of his trips to the western Kentucky fields, traced out the structure that is close to the college at Bowling Green, down through Warren, thence through Allen County and across the line in Tennessee to the Boiling Springs area, this old well was discovered and oil was still seeping from it, and it is just east of this old well where the structures are now being mapped out. Should oil be found in quantities it will no doubt mean an extension to the pipe lines now handling the crude in both Allen and Warren Counties into Tennessee. While some good wells, for a time, were found in the Tinsley Bottom Field of Clay-Jackson Counties, Tennessee, their producing life appears to have been short, as the most pronounced structure in that field appears to have been overlooked. This field was developed by the DeFoe interests but has been disposed of to parties from Cleveland, Ohio, and reports are that a company is being organized to further develop the holdings. Most of the wells drilled in the Tinsley's Bottom Pool were drilled around the fringe of the dome and left untouched the best part of the structure, states a geologist who looked over the field and in that case some fine production should yet be found there.

Mississippi

More tests are starting and more new drilling work being planned than at any time in the history of development in Mississippi and well scattered over a large portion of the State. This activity is brought about by a long study of the geology of the State by well-known geologists and scouts of the leading companies. F. E. Henderson, who is well advised as to work doing at this time

THE FOOS TYPE V

Gas Engine



Here is a heavy duty gas engine that enjoys a remarkable reputation for reliability, economy and stamina. Twenty-one years of pumping service in the oil industry have proved its quality. Steady, 24-hour service for months at a time under constant overloads is the lot of many Type V Foos engines year after year, and they are especially built for that kind of service.

The parts of this engine that would be subject to wear are few and oversized. All bearings, cams and gears operate in a bath of oil supplied by a splash system. The easy accessibility of all working parts contributes to low maintenance by making inspection and care convenient.

Type V is built in units of two, three, four and six cylinders, developing 50 to 500 H. P. at conservative ratings. Speeds up to 310 R. P. M., depending on engine size and type of drive employed.

Fully illustrated and described in bulletin G-85.

Write for a copy today.

The Foos Gas Engine Co.
Springfield, Ohio
U. S. A.

[For 40 years manufacturers of high quality internal combustion engines exclusively. Types for all gas and liquid fuels.]

POWER

GUARANTEED PERFORMANCE!

"CYCLONE" Hoists and "Matchless" Trolleys stand entirely on their merits. Their *proven performance* makes possible *guaranteed performance.* The following offer is convincing proof that these unbeatable material handlers are built to *deliver the goods!*

GUARANTEE

"Cyclone" Hoists and "Matchless" Trolleys are backed by a one-year guarantee against defects in workmanship and material.

Exclusive features of construction place "Cyclone" Hoists and "Matchless" Trolleys in a class by themselves. And that's no idle boast! For instance—

"Cyclone" Hoists have the exclusive *gyrating* principle of operation whereby more than twice the usual number of lift gear teeth are always in mesh. Results? An easier moving, high-speed hoist with a minimum of friction and an exceptionally long life.

"Cyclone" Hoists have the exclusive *single unit principle of construction* which means that sizes are increased by increasing each part, thereby eliminating the objectionable method of obtaining larger sizes by doubling up on smaller sizes. Result? The same simple, compact construction in all capacities of "Cyclone" Hoists.

"Matchless" Trolleys have Flangeless Track Wheels, an exclusive, patented feature. Result? No binding or scraping on edge of beam. Trolley moves freely around curves.

"Matchless" Trolleys have Timken Tapered Roller Bearings which take up all end and radial thrust so apparent in other I-beam trolleys. Result? Friction is minimized and axles and frame are protected from wear.

Every other detail of construction of "Cyclone" Hoists and "Matchless" Trolleys represents the best engineering practice. For complete information get in touch with the "C-M" representative in your territory. If you don't know where to locate him write us direct.

TO THE TRADE

Remember that "C-M" products are safe to sell because they are safe to buy. "C-M" representatives are backed to the limit on sales co-operation. Your inquiry will receive prompt attention and be held in strict confidence. Write.

THE CHISHOLM-MOORE MANUFACTURING CO.
Branches: New York—Chicago—Pittsburgh
Representatives in All Territories for Immediate Service

CHISHOLM-MOORE
OVERHEAD HOISTS CRANES TROLLEYS TRACK SYSTEMS

writes from Amory a detailed report as follows:

"One year ago on February 15, the Carter well was spudded in. A trip over the territory convinces the visitor than an oil field at last is near. Fuel lines distributed over the surface, burning gas torches, four-ups transferring machinery, tooting whistles of drilling rigs, a populace on tiptoe waiting and hoping for the day when oil wells will be discovered and a realization of their dreams of wealth.

"Drilling with cable tools has been started on the Hall lease in Section 8-13-17, by the Amory Petroleum Co. at a depth of 645 feet. This is the deepest test under way, with the Quincy Oil Co.'s test on the Darret land in Section 29-13-17, a close second at 410 feet. The Buffalo Oil & Gas Co. test on the Crook land, in Section 4-13-18, is waiting on cement where 10-inch casing was set at 379 feet. Derrick timbers are being cut for a test on the Mawk Block in Township 13, Range 7e.

"Drilling has started on the Hensley lease in Section 15-21-11, Webster County, by the Cumberland Oil Co., and a contract closed with a Pittsburgh oil company for three more tests in the same county. The second test of the Buffalo Oil & Gas Co. has been made in Section 14-8-6, Lee County, and derrick timbers ordered.

"Reviewing developments since the starting of the Carter well, numerous improvements have taken place in Amory particularly, and business at Aberdeen as well as Amory has felt the benefit of the oil and gas development program. Bankers interviewed at both towns estimate that since the gas well came in October 5, there has been spent in Monroe County upwards of $1,000,000 for oil and gas leases and royalties. At present, 21 contracts have been closed for drilling test wells. An idea of the amount of land taken in Monroe County can be reached from the fact it has required nine record books to supply the demand for filing.

"Besides 21 drilling contracts in the six counties considered in the Amory district, there is a noticeable activity throughout the entire State, as well as four counties in Alabama near the Mississippi State line. At Corinth, A. M. Keisker is starting a test well; the Buffalo Oil & Gas Co. will start wells soon in Lee and Union Counties. Rich and others are drilling near Charleston, in Warren County. Near Edwards, in Hinds County, Baker and others got a showing of oil and gas at a depth of 800 feet. L. B. Price, of Jackson, has set casing at 2,180 feet on a well near Crystal Springs, in Copiah County. Near Dlo, in Simpson County, Livingstone and others are reported drilling around 3,490 feet. This is near where the Finkbine interests drilled two wells last year where encouraging signs were found of both oil and gas.

"At Magic City, Section 36-11-3, Stone County, local parties have resumed operations on their test. In Leake County, near Conway, the Pittsburgh Oil & Development Co. is planning to start its first test at once, and contracts for three additional wells have been made on a block of 170,000 acres. In Neshoba County, S. B. King and others are preparing to start a test near Philadelphia. Jack Mobley and others are to start within 30 days on a block of leases in Lowndes County, in Township 18-6."

CALIFORNIA REFINED MARKET OUTLOOK

(Continued from Page 126)

a daily average of 135,595 bbls. of gasoline was produced by California refineries. Four months later, in December, 1926, this production of gasoline had increased to 153,562 bbls. This is an increase of 13 per cent in four months. Very probably the rate of increase of gasoline production during the succeeding four months will be very much greater still than the production during the four months just mentioned.

This is due almost entirely to the completion of large additional cracking facilities and a greater production of natural gasoline rather than to any increase in production of straightrun gasoline from crude. A year ago the amount of cracked gasoline produced in California was negligible, representing possibly a few thousand barrels a day. It is reliably estimated by refinery technologists and marketers in very close touch with the development of cracking in California that the production of cracked gasoline in California will attain a total of 40,000 to 50,000 bbls a day by midsummer. It is not reasonable to assume that the consumption of gasoline in the normal Pacific Coast market will increase more than 20 per cent during the coming year over the consumption of the past year. An increase of 20 per cent would be a very considerable one, quite in excess of the average increase in consumption to be expected for the United States or the world as a whole, and the possibility of such 20 per cent increase is feasible only because of the rapidly growing population of the Pacific Coast and the very good tourist season which all indications point to. As far as gasoline consumption is concerned, conditions in the United States are more or less representative of the world as a whole since the United States has about 20,000,000 automobiles out of the world's total of 26,000,000.

The conclusion to be drawn from the facts and suppositions just cited is that California gasoline must be offered in coming months at lower prices to compete with increased shipments from Gulf ports, assuming that bottoms can be found to move it in. Otherwise, only one thing can happen and that is the accumulation of increasing stocks of gasoline at California refineries and tank farms until both Mid-Continent production declines and ships become available again.

Present Local Situation

At the present time the gasoline market in the principal Pacific Coast cities, particularly Los Angeles, is showing a tendency to softness. Two or three weeks ago everybody seemed to take it for granted that gasoline prices which had been increased from 1 to 2 cents a month previously would again be increased at least 2 cents per gallon. Right now everybody would be entirely satisfied if prices stayed where they are. In other words, the fear is present that in addition to export sales being made at low prices, it might be necessary to reduce prices also in the local Pacific Coast market.

The fuel oil market on the Pacific Coast has remained quite steady for some time and can apparently be maintained. There are two scales of prices, a nominal one of around $1 a barrel at which all relatively small spot and contract sales are made. By "small" in this connection is meant spot lots of less than 5,000 bbls. and the average industrial contract requirements. Large spot lots representing pipe line transfers between companies and cargo sales are going at very much lower prices ranging somewhere between 70 and 85 cents a barrel. What the coming year will develop in this connection is hard to predict but it is probable that present conditions will not change materially as California is already underselling the world as far as fuel oil is concerned.

Kerosene sales during the past six months have been very much disturbed by conditions in China but are still being made on a fairly satisfactory basis in restricted amounts.

Gas oil is being held in storage in large quantities by several major California refiners but cannot be moved at the present time because of the tanker situation. If this does not improve shortly, production of gas oil will undoubtedly drop to a negligible quantity and that which could be produced will be left in the residuum and sold as fuel oil.

The lubricating oil market during the past year has shown a steady increase in volume with a tendency toward lower prices. Indications are that these same two conditions will continue for the next year.

Early in 1924, there were some 30 or

Unequalled Speed

LEIDECKER
SPIRAL
DRILLING BITS

Patented
Other Patents Pending

faster To drill faster is to drill better : - : 2 cutting edges, 4 cutting points, vertical plus self-propelled rotary motion, thoroughly mixed cuttings, side-walls prepared for casing, full-round, straight - - - - - - Such results of the S P I R A L design are ample for more and better performance.

"DRILLING TOOLS DESIGNED RIGHT WILL DRILL MORE"

Mid-Continent Distributors
THE BOVAIRD SUPPLY COMPANY
Tulsa Phone 3-9151

Stocks at: Tulsa, Sapulpa, Beggs, Bristow and Seminole, Oklahoma; Independence, Kansas, and Borger, Texas.

Sold by Supply Houses everywhere

Manufactured by
The Leidecker Tool Co.
Marietta, Ohio

Branches at:
Casper, Wyoming
Basin, Wyoming
Bartlesville, Okla.

Export Office—90 West St., New York

Lasting— 6 times as long— as balls and seats and Still working Perfectly

Norris Brothers, Inc.,
Robinson, Illinois

Sometime ago after hearing a great deal of talk among oil producers regarding the wonderful success they were having with NO-CO-RO Drops and Seats, I decided to try them out. I placed several seats of NO-CO-ROS in wells where the best Tool Steel Balls and Seats were lasting only a short time. These NO-CO-RO Drops and Seats have now been in the wells six times as long as any Ball and Seat has ever stood up in the same well and they are still working perfectly today.

Very Truly Yours,
(Name on request)

Need we say more? . . . . . After reading this letter and combining it with others we have reproduced, can anyone interested in economical production delay giving this remarkable development a trial? Remember, twice the service of your best Balls and Seats or your money back. Can anything be fairer than that?

Twelve to twenty-four hour service to the Mid-Continent and Gulf Coast Fields.

NORRIS BROTHERS, Inc.
Robinson, Illinois, U. S. A.
Mid-Continent Warehouse: Fort Worth, Texas

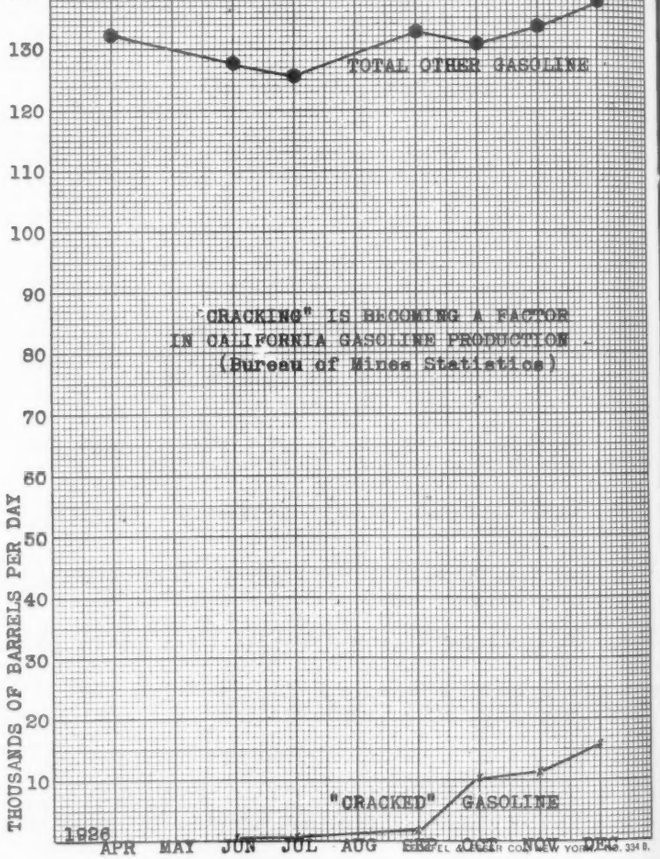
more small refineries in the Los Angeles Basin. This number has now been reduced to less than a dozen and the owners and managers of all of these have no hesitancy in stating that during the year 1926 they all lost money in varying amounts but most of them to a very serious extent. It is becoming increasingly difficult for the small refiner to compete in price with the large operator in California. Even favorable location at the source of crude supply no longer gives the required edge on the business. It has now become a matter of being able to produce cheap gasoline by large scale investment in the latest and most highly-developed cracking equipment.

NATURAL GASOLINE IN CALIFORNIA IN 1927

(Continued from Page 126)

out results. Refining capacity has increased along with the production of refinable crude oil. And not only capacity, but efficient capacity. Improved methods of handling and better distillation equipment are responsible for a considerably higher net yield of gasoline from the crude oil run. Vapor recovery systems account for a considerable additional quantity of the most valuable part of the light crude oil, further raising the net yield per barrel.

The single most important development in California refining practice is the extensive use of natural gasoline in blending. By this means, a very considerable increase in the net yield of salable gasoline from the crude oil is obtained. It has made possible the utilization of the valuable power-producing fractions in a much higher proportion (in relation to their occurrence in the crude oil) than is possible without blending. Blending with natural gasoline also permits the refiner to carry his fractionation to a higher degree of perfection. There is, of course, a limit to which blending can be economically carried. It varies with the specifications of the natural gasoline and the efficiency of fractionation in the distillation of the crude oil, but an average figure appears to be about 25 per cent natural gasoline in the blend. Since many refiners do not go this high, the demand for natural gasoline begins to fall off when the proportion of natural straightrun approaches 15 or 20 per cent. A glance at the accompanying curve showing current California natural gasoline statistics, reveals the cause of the weak position of the natural gasoline market at the start of 1927. The production of natural gasoline has reached the point where there is an excess quantity over the ordinary blending requirements of the refiners, with the result that the amount in storage is steadily building up. It is interesting to note that during 1925 and the early part of 1926, the quantity of natural gasoline in storage in California averaged less than three days' available supply, while at the beginning of 1927 stocks had reached an amount equivalent to more than 10 days' normal production.



Fuel Oil

As mentioned, there are two main commodities representing the great part of the output of California refineries. These are gasoline and fuel oil. In spite of the best efforts of the refiners to increase the net yield of gasoline from the crude, the average proportion of fuel oil obtained from the refinable crude is still well over 60 per cent of the total.

The difficulty is that the market for fuel oil has not increased at the same rate as the gasoline demand. The struggle to keep an economic balance, while effecting wonderful accomplishments in keeping the industry in a healthy condition without increasing the retail price of gasoline, has failed to prevent the building up of fuel and heavy-oil stocks to a tremendous magni-

Corrosion is waste!

30% of the iron and steel manufactured is used to replace corroded material!

ATERITE resists corrosion!

Corrosion through chemical action is one of the big problems every oil refinery is constantly battling against. Among other things it is due to the sulphur and its compounds found in all crude petroleum, and to the salt water with its proportion of magnesium chloride. But irrespective of the cause of the corrosion, it is incessantly draining away the profits.

Corrosion is a destructive force that relentlessly attacks oil refineries. It causes constant deterioration, slows down operations, interrupts production to make repairs, and together with the costs of installations and replacements the money-toll reaped by corrosion attains a staggering total.

But you can hold it in check with ATERITE—the patented non-corrosive, acid-resisting, metallic alloy. It has fully demonstrated its ability to ward off this ruthless destruction, for ATERITE Valves and Fittings have successfully withstood corrosive action.

Various tests have also proved the strength, ductility, torsion, density and other qualities of ATERITE, and the results are shown in our interesting book which we will be glad to send you.

Standard Aterite Gate Valve—Screwed Bonnet—Screwed Ends.

Cast Aterite is recommended for these chemicals

ACIDS:

Arsenious	Formic	Pyrogallic
Boric	Hydrofluoric	Salicylic
Carbolic	Hydrofluosilic	Sulphurous
Citric	Lactic	Tannic
Fatty	Oelic	Tartaric

Sulphuric—Cold—of any degree Baume, including Fuming.
Sulphuric—Hot—up to 60° Baume, any temperature up to 150° F.
Sulphuric—Hot—60° to 66° Baume, any temperature up to 350° F.

BASES:

Calcium Hydrate	Caustic Soda	Caustic Potash

SALTS:

Aluminum Chloride	Ammonium Sulphate	Lead Acetate
Ammonium Bromide	Barium Chloride	Nickel Sulphate
Ammonium Carbonate	Barium Sulphate	Sodium Citrate
Ammonium Citrate	Calcium Chloride	Sodium Hypochloride
Ammonium Oxalate	Calcium Citrate	Sodium Formate
Ammonium Phosphate	Calcium Sulphate	Sodium Phosphate
	Copper Sulphate	Sodium Sulphate

ORGANIC COMPOUNDS:

Acetone	Collodion	Formaldehyde
Benzol	Ethyl Alcohol	Glycerine
Carbon Tetrachloride	Ether	Methyl Alcohol
Chloroform		Phenol

MIXTURES:

Mine Water — Tannic and Sulphuric Acids

COLORS:

Nearly all colors and derivatives made from coal tar products and many others.

ATERITE will help you solve your acid-resisting problems, and if you will tell us about your own particular difficulties, we will cooperate with you to get the best results.

Standard Aterite Gate Valves—screwed bonnet, screwed ends—are furnished in the following sizes: ¾", 1", 1½".

Standard Aterite Gate Valves—bolted bonnet, screwed or flanged ends—are furnished in the following sizes: 2", 3", 4", 6", 8".

Aterite Extra-Heavy Cocks, particularly adapted for lines carrying Sulphuric Acid, are constructed entirely of Cast Aterite in sizes: ¼", ¾", 1", 1½", 2", 3".

Aterite Extra-Heavy Cock—Screwed Two-Way Plug.

Standard Aterite Gate Valve—Bolted Bonnet—Screwed or Flanged Ends.

The Barber Asphalt Company
Iroquois Department
PHILADELPHIA
New York Chicago St. Louis Kansas City
Pittsburgh San Francisco

ATERITE

TRADE MARK REG. U.S. PAT. OFF.

Non-Corrosive Acid-Resisting Valves & Fittings

for Oil Refineries and General Chemical Purposes

Know Perfecto *performance* and you will be a Perfecto user

Once you have experienced Perfecto operation you will know the meaning of heat efficiency.

Steam pressure of 150 to 175 lbs. on gas pressures of 2 to 10 lbs. That is Perfecto efficiency! Equally adaptable for moderate or high pressures.

Complete combustion, Perfecto operation is economical and there are no delicate adjustments—built for oil field service—*consequently oil field satisfaction.*

Perfecto is patented in the U. S. A. and patents are pending in India and Canada. Made and sold by

The P. J. Sonner Gas Burner Co.
Winfield, Kansas

Sales and Service at

Tulsa, Okla. — Shawnee, Okla. — Los Angeles, Calif. — Pampa, Texas — Borger, Texas — Wichita Falls, Texas

tude. In fact, at the opening of 1927, the quantity of this commodity in storage had reached the staggering total of over 8,000,000 bbls. This is somewhere in the order of a whole year's supply at the normal consumption if all production should cease.

Several factors have combined to hold back the consumption of fuel oil while that of gasoline has been so rapidly increasing. First, the railroads, perhaps the largest single consumer of fuel oil, were already established users of fuel oil when the great increase in production took place. Second, along with the development of the large light oil fields, came the production of large quantities of natural gas. This gas has furnished the major portion of the industrial fuel for Southern California, even supplying plants which had formerly burned fuel oil exclusively. Third, material increases in available electric power, and corresponding lower industrial rates, displaced still more fuel oil.

The natural outlet for the excess supply of fuel oil was the export trade. Most of the large companies have been forced to develop this side of the oil business, owning their own tanker fleets and distributing California oil all over the globe. But with the demand for gasoline still growing and heavy oil stocks increasing month after month, the refiners are at last turning their attention to "cracking" to control the economic balance between these two commodities.

"Cracking"

The peculiar characteristics of California oil, render large-scale cracking installations more or less of an experiment. A few serious problems have not yet been worked out, but evidently California refiners are convinced that they can solve these problems. Bernard O'Connor, of the California Petroleum Corporation, speaking before the Montana Chapter of the Rocky Mountain Oil & Gas Association, estimated that the output of cracked gasoline on the Pacific Coast would reach a total of 38,475 bbls. per day by the end of 1927. In conclusion he said, "This is probably the biggest step made by Pacific Coast refiners since the start of the industry in that territory as it means the expenditure of millions of dollars; and we realize the diffculties we will encounter in the treatment of cracked gasoline from California stocks, the excessive corrosion on equipment due to peculiar sulphur in California oils and other factors. What the result will be is not, of course, a foregone conclusion, but all companies feel they can overcome these difficulties, each in its own way. If we don't, we have spent a lot of money for an education. If we do overcome the difficulties, we can supply a better gasoline to the market, can increase our own earnings by getting all the return on the money invested in crude oil and at a cost to the public of not more than at the present."

The sudden appearance of cracking as a factor in California gasoline production is strikingly shown by the accompanying curve. According to Mr. O'Connor's estimate, the curve for cracked gasoline will continue to rise in about the same proportion throughout 1927.

Natural Gasoline Still "Balance Wheel"

The advent of extensive cracking in California should considerably strengthen the petroleum industry as a whole in this section. Some fear has been expressed that cracking would further weaken the position of natural gasoline, but it is the opinion of the writer that the opposite will be true. Large-scale cracking should supply the place for the excess natural gasoline production which has been building up during recent months.

Just as natural gasoline made possible the obtaining of higher net yields of straightrun gasoline from the crude oil put through the refineries, so it will enable the refiner to get the most out of his cracking units. Cracking is essentially similar to regular distillation. By re-running the high-boiling fractions from crude oil under conditions of temperature and pressure favoring the conversion of the high-boiling fractions into a new series of compounds whose boiling points fall within the range of gasoline, the increased yield of gasoline is obtained. In the utilization of this "second yield" of gasoline the same economic considerations which brought about the practice of blending with natural gasoline hold true. In fact, a much lower gravity in the aggregate is shown by cracked gasoline when compared with straightrun gasoline of the same boiling range. Since gravity is still an important specification so far as the public is concerned, this consideration alone suggests the probability of blending the cracked product. A powerful economic factor also has a bearing on the probability that refiners will extend the blending practice; this is, the greatest part of the natural gasoline produced in California is already owned by the refiners themselves.

Taken as a whole, the outlook for the California refining and natural gasoline industries indicates continued advancement to a stronger and stronger position in relation to the rest of the world. Crude oil production is stable, the markets for the products are, in general, geographically protected from dangerous competition. Refinery engineers are ably meeting the peculiar conditions under which the California industry is forced to operate, and the economic balance between the proportion of the various products on the one hand and the demand for these products on the other, is rapidly becoming adjusted.

MAKING SPECIAL NAPHTHAS IS COSTLY

(Continued from Page 130)

taining an even proportion of the successive fractions.

With these facts known, most refiners are hesitant to make these special naphthas, and when they do make them it is usually at a loss in following out the practice of making a complete line of products expecting to equalize the loss in the sale of some other product.

Cost Should Be Understood

It is to the common interest of the refiner and user to discuss their problems openly, and before a set of specifications are definitely adopted the cost of making the product should be understood. To keep from paying the extra cost, substitutes are used sometimes, such as ordinary gasoline, and this probably is satisfactory except for the explosive hazard. But a standardization of the specifications will permit quantity production, and if all of the unessential specifications are eliminated the manufacturing costs may be reduced to a minimum so that more of these special naphthas may be used, and the refiner and user will be benefited alike.

A large outlet for these naphthas is through the Chicago markets; and even though much of the volume is supplied by Illinois and Indiana refineries, a great share of it comes from the refineries in Oklahoma and Kansas, which have specialized in their manufacture.

The future market for this material should constantly increase; and although more efficient reclaiming processes are used, no low-priced substitute has been found; and as the general expansion of the industries takes place, a greater volume of these naphthas will be needed aside from the uses that may be developed in new industries.

DEATH OF W. N. SHEEHAN

William Nolan Sheehan, of the Sheehan Pipe Line Construction Co., Tulsa, died in St. Luke's Hospital, Kansas City, March 2 after seven weeks' illness of influenza and resultant ailments. He was born in Bradford, Pa., 24 years ago. His father, the late John Sheehan, was a widely known pipe line contractor. The deceased had lived much of his life in Oklahoma. He leaves a widow and one son, four brothers, Walter Sheesan of Santa Paula, Calif., John B., Frank N. and Raymond J. Sheehan of Tulsa, and two sisters, Misses Rosemary and Helen Sheehan. The funeral was held Saturday in Tulsa.

The LARKIN *Improved* SAND PUMP

the best pump for any job— no matter how tough

THE outstanding advantage of the Larkin Improved Sand Pump is its flexibility—in that it operates successfully at all depths, under all conditions. Under normal conditions it will bring out the sand and sediment in record time—equipped with the Regular Bottom.

But—for that tough job, where the cavings have packed hard—there is the Bit Bottom. As its name implies, it is used for drilling and breaking the sand loose. It will break up the hard formations so efficiently, and pass the material through to the pump so quickly, that the pump may be operated at full capacity without being delayed to any extent—even by the worst conditions encountered. To be prepared for any job, no matter how difficult, get the Larkin and have it equipped with both the Regular Bottom and Bit Bottom to give better than ordinary cleaning-out service.

This *Leader of the Larkin Line* will clean out your wells quickly, thoroughly; it will last through years of hard service. Even more than when the Eastern fields were young, it is the most efficient sand pump on the market.

Sold by leading Supply Stores.

Send for Circular and Price List.

Made only by

LARKIN & CO.

at BUTLER, PENNA.

These extra fine bottoms give the LARKIN pump real advantages

Regular Bottom

In the Larkin Regular Bottom, the legs are short allowing the pump to rest as near the bottom of the hole as possible and still obtain the necessary suction to remove the greatest amount of sand and sediment quickly.

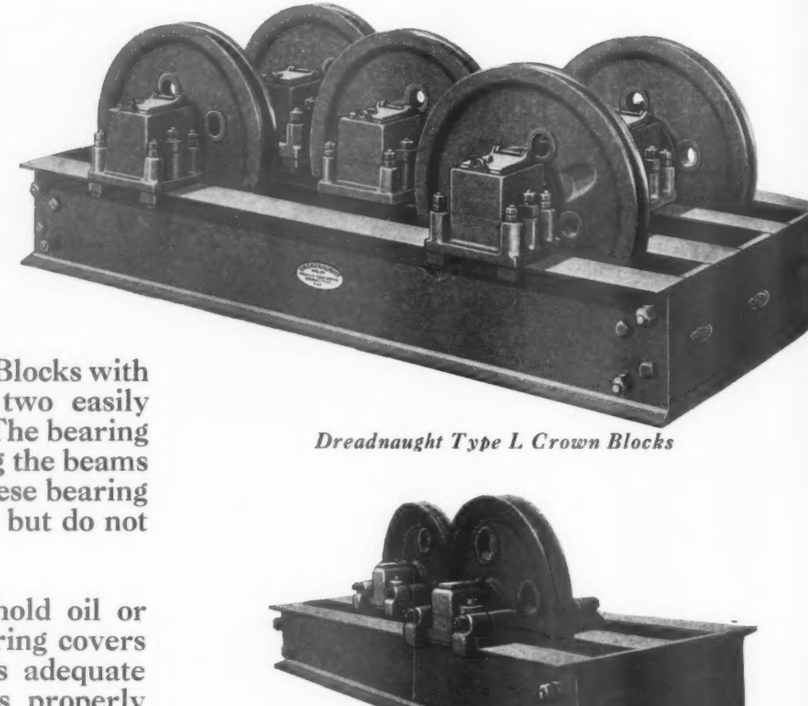
Bit Bottom

This Bottom is used for drilling and breaking the sand loose. Its chisel shaped design is unique, prevents sticking, and allows successful operation in tightly packed sands.

Dreadnaught Crown Blocks

DREADNAUGHT
MFD. BY
BEAUMONT IRON WORKS CO.
BEAUMONT, TEXAS
U. S. A.

[This Seal Appears on All Genuine Dreadnaught Equipment, and is a Guarantee of Quality.]



Dreadnaught Type L Crown Blocks

DREADNAUGHT Type L Crown Blocks with five or six sheaves are hoisted in two easily assembled and disassembled sections. The bearing boxes are then adjusted anywhere along the beams for accurate centering of the lines. These bearing boxes are readily loosened and shifted, but do not work loose of themselves.

Large reservoirs in the bearing caps hold oil or grease, and closely fitting hinged bearing covers keep out rain and dust. Lubrication is adequate over long periods, once the system is properly serviced.

Like all DREADNAUGHT Products employing sheaves in which a line must run, the sheaves of DREADNAUGHT Crown Blocks have hubs that are accurately bored and faced, are turned for true circumference, and the rope grooves are turned to glass-like smoothness. All of which adds immeasurably to the life of the line.

All DREADNAUGHT Crown Blocks have semi-steel sheaves unless otherwise ordered. We can furnish High Manganese Steel Sheaves, sometimes desired in deep drilling, direct from our factory on request.

For further details write for circular, or inquire at any Frick-Reid Store.

Beaumont Iron Works Co.

Beaumont, Texas

Frick-Reid Supply Company, Mid-Continent Distributors

We Favor the Standardization Program of The American Petroleum Institute

SOUTHWEST WILDCATS

(Continued from Page 59)

1,250 to 1,300 feet, and the old Charco Redondo Pool in the lower part of Zapata County producing at 160 to 180 feet and the three are in line of the trend of the Randado Pool and other pools of that area running northeast and southwest but slightly off the straight north and south line. Laredo operators see in the situation considerable invitation to considerable more wildcatting.

Duval County

Ralston M. Talbott, Inc., No. 1 Margarite, Survey 4, is drilling at 1,660 feet. Humble Oil & Refining Co. is rigging up No. 12 Singer, in Survey 4, located 2,600 feet to north line and 2,000 feet to west line; No. 2 Dilworth, Survey 120, at 2,350 feet to west line and 1,000 feet to south line, is drilling at 1,248 feet. Humble-Reiter-Foster's No. 3 Kohler, Survey 144, located 1,320 feet to southwest lines, is drilling at 2,801 feet; No. 4 Kohler, Survey 400, located 660 feet to southwest lines, is drilling at 2,200 feet. H. B. Schlesinger, trustee's No. 1 Hahl, Survey 76, located 660 feet to northwest lines, at 2,482 feet, is bailing 8 to 10 bbls. of oil and 3 bbls. of brackish water. Well will swab oil, which is 18.5 gravity. Hoffer-Smith's No. 1 King, Block 10, W. R. King ranch, 1,320 feet to northwest lines, is coring at 2,400 feet. Magnolia Petroleum Co.'s No. 1 Hahl, Survey 51, located 330 feet to soutwest lines, at 3,408 feet is shut down due to lack of water.

Hidalgo County

W. E. Hornaday has spudded in a test 7 miles north of Mercedes. Hidalgo Oil & Gas Co.'s No. 1 Poorbough, Santo Anito grant, SE cor. of NE, section, is drilling water well.

Jim Hogg County

Holden and others' No. 3 Jones, Share 27, Block 136, located 330 feet to northeast lines, is drilling at 500 feet. Roxana Petroleum Corp.'s No. 1 Vela, Survey 579, Share 3, located 2,315 feet to north line of survey, is at 2,510 feet, total depth. Hamilton and others' No. 1 Holbien, Block 44, Hamilton Subdivision, is drilling at 225 feet.

Webb County

Edward St. Albans' No. 1 Puig, located in the St. Albans Puig ranch at 1,861-63 feet is being placed on the pump. Alexander and others' No. 1 Moglia, Survey 670, located 150 feet to north line and 660 feet to east lines, is coring at 2,916 feet. Creswell-Fallin's No. 1 Gates, Survey 17, Block 1, located 189 feet to north line and 2,640 feet to east line, is standing at 2,772 feet. W. O. Wheatley and others' No. 2 Kruger, Survey 1,570, Block 4, at 140 feet to north line and 421 feet to east line, is fishing at 2,310 feet. O. W. Killam is rigging up the No. 1 Billings, SE NW, Survey 43, located 150 feet to south line and 750 feet to west line. Ellis and others' No. 1 R. Benavides, Survey 112, located 1,170 feet to southwest lines, is drilling at 2,150 feet.

Starr County

Southern Exploration's No. 2 Russell, Share 173-B, Porcion 69, is waiting on orders to spud in. Simms and Magnolia's No. 1 Salinas, Block 6, Share 38-C, Porcion 80-81, is in hard lime at 2,800 feet. T. C. Hadley's No. 1 M. M. Garcia, Survey 538, at 2,722 feet to south line and 2,102 feet to west line, is setting surface casing at 64 feet. Milham Corp.'s No. 2 Salinas, Porcion 111, SE cor., is drilling at 460 feet; No. 1 Salinas, Survey 9, located 1,275 feet to south line and 1,140 feet to east line, is drilling at 2,500 feet. Sterling & Suladie's No. 1 Yzaguirre, Block 8, located 1,320 feet to southwest lines, is drilling at 2,060 feet.

Zapata County

Mission Oil Co.'s No. 1 Slator, Block 16, located 4,577 feet to southwest and 11,853 feet to southeast lines, is drilling at 650 feet. Buffalo Eric Syndicate's No. 3 Martinez, Vill grant, 5,000 feet to east line and 416 feet to south line, has a sand at 916 feet and is testing.

Atascosa County

Frontier Oil Co. has made location for No. 16 Harvey, located 150 feet southeast of north line, and is moving in rig. No. 8 Foster, J. P. McKinney Survey, NW cor. of lease, flowing 4 bbls. at 1,752 feet.

Bexar County

Associated Petroleum Co.'s No. 11 Caruthers, Caruthers Survey, 525 feet south of No. 10, at 1,500 feet was completed making 8 bbls. N. A. Saigh has made location for No. 1 J. Frees, S. McCulloch Survey No. 49, SW cor. Texas Border Oil Co.'s No. 1 Mary Gaines, shut down at 3,050 feet, is being plugged and rig moved off. A. R. Beall and others' No. 1 Ackerman, White road, 2 miles east of city limits of San Antonio, drilling at 150 feet. Hamilton Land & Development Co.'s No. 17 fee, Gas Ridge, 800 feet off Frio City road, topped Edwards at 1,390 feet.

Bastrop County

Johnson Brothers are moving in machinery for No. 1 Williams, Doyle Survey, 1,050 feet to northwest and 750 feet to southwest lines.

Bee County

Nichols & White's No. 1 Hicks-Ball, Hicks-Ball Survey, Block 19, NW cor., is drilling at 800 feet.

Brewster County

Green Valley Oil Corp.'s No. 3 Wilson, located 50 miles south of Alpine, has been shot, with total depth 1,800 feet.

Caldwell County

Sutton & Smith's No. 2 Carter, G. Hinde Survey, 150 feet to center west line is drilling at 1,003 feet. L. I. Dodwell's No. 1 Lawler, James Pinchback Survey, 750 feet to north line and 150 feet to east line, has spudded in. Flynne Brothers' No. 1 Carter, 4 miles south of Lytton Springs, is drilling at 2,200 feet with a little trouble caused by drill stem twisting off. John Storey's No. 1 Jeffreys, south of Dale, is in chalk at 2,425 feet.

DeWitt County

McNeil & Matthews' No. 1 Kaiser, located 1,800 feet to southwest lines of Kaiser farm, is moving in rig. Empire Southern Oil Co.'s No. 1 C. G. Smith, 8 miles southwest of Cuero, is setting casing at 2,440 feet to protect hole.

Dimmitt County

Humble Oil & Refining Co.'s No. 1 City National Bank, Survey 654, located 700 feet to north and 2,000 feet to east lines, is drilling at 700 feet.

Frio County

P. A. Neilan's No. 1 Blackaller, James Gouley Survey, is fishing at around 2,800 feet.

Fayette County

LaFayette Oil Co. is making location for test. George W. Zeigin's No. 1 Rossa Russek, East Anderson League, is shut down at 2,514 feet.

Gonzales County

Bristol Oil & Gas Co. is skidding derrick for No. 2 Denmann, A. Zumwalt Survey, 1 mile southwest of Ottine. Kercheval Production Co. is erecting derrick for No. 2 Billings, G. Gwinn Survey, 100 feet north of No. 1 Martin Oil & Development Co.'s No. 1 Preston. Pace League, near Cheapside, is waiting on casing, total depth 1,440 feet. E. Lee Moore's No. 1 Elder is testing. Joe Bruner's No. 1 Vaughan, Kent Survey, 200 feet to west line and 300 feet to north line, is fishing. C. A. Campen's No. 1 Lamkin, 2½ miles from Waelder, is shut down at 2,190 feet.

Guadalupe County

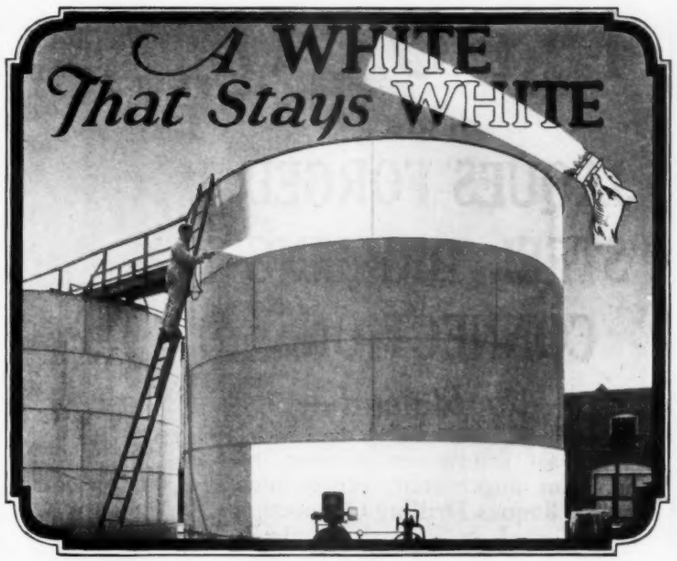
F. G. Blumberg's No. 1 Angelke, H. Cottle Survey, Blocks 7 and 8, 450 feet to northeast and 184 feet to northwest lines, is fishing at 2,118 feet. F. A. Lain is moving in rig for No. 1 F. C. Weinert, W. K. Estell Survey, 150 feet from center of north line.

Karnes County

Earl B. Reynolds' No. 2 Butler, Block 43, 1,000 feet south of No. 1, is swabbing at 1,944 feet. Ray Oil Co.'s No. 1, located 1½ miles east of Karnes City, is moving in rig.

Kerr County

Walker-Van Duyn's No. 1 W. B. Leigh, Survey 38, located 500 feet north of river and 150 feet south of railroad, had good



Lucas

Fume Proof
Tank White

Color of tank paint is an important factor in the control of content-loss by evaporation. Heat-deflecting property of the paint determines its value in that respect.

The lighter the color the greater the heat deflection. *LUCAS* FUME PROOF TANK WHITE holds its color.

Lead and oil paints are readily affected by fumes, causing them to turn dark. Some others tarnish. This defeats the very purpose for which they are used.

Rigid tests over long periods of time prove that *LUCAS* FUME PROOF TANK WHITE lasts decidedly longer—saving cost in less frequent painting, and saving loss thru evaporation of tank contents.

That is why some of the largest producers are using exclusively *LUCAS* FUME PROOF TANK WHITE. Consult our Industrial Dept. H-3 without obligation.

Write us at Philadelphia or the most convenient Branch.

John Lucas & Co., Inc.

Paint and Varnish Makers Since 1849

PHILADELPHIA

NEW YORK PITTSBURGH CHICAGO BOSTON OAKLAND

And Local Distributing Points

TIFOCO

made

JAQUES FORGED STEEL DRILLING CONNECTIONS

—double end—

The vast improvement over the common auger stem represented by the Jaques Drilling Connection is reflected in records made in every field, not only in correcting and PREVENTING crooked holes, but also in the additional advantages which place them in a class by themselves:

1. Prevents crooked holes
2. Lessens jar breakage
3. Cleans hole for bailer
4. Allows more than one screw before running bailer
5. Prevents cutting of drilling cable
6. Eliminates possibility of cave-ins
7. Undue wall friction eliminated
8. Reduces whipping of drill cable
9. Tools are always in center of hole for fishing
10. Gives the tools a rotary motion, and prevents key-seating.

Not many operators are willing to pass up these decided advantages for the sake of a little more money than ordinary stems cost, and those who have not yet experienced the satisfaction of using Winged Drilling Connections, are being won over daily. Jaques Forged Steel Drilling Connections are made from the solid under 2000-ton hydraulic forging press, and are guaranteed free from welds.

Manufactured Exclusively by

Titusville Forge Company
Titusville, Penna.

Distributed by
THE CONTINENTAL SUPPLY CO.
St. Louis, Mo.

OIL WELL SUPPLY CO.
Pittsburgh, Pa.

For Export
THE CONTINENTAL WELL SUPPLY CO.
2 Rector St., N. Y. C.

oil showing at 1,600 feet but not enough to make a well and is drilling deeper.

Kinney County

W. A. Stephens and others' No. 1 Jim Clamp, John Winters Survey, No. 346, center of survey, rig moving out for test.

Lavaca County

Steinman Brothers' No. 2 Steinman (fee), 4 miles southeast of Yoakum, is drilling at 800 feet.

Live Oak County

Houston Oil Co. has made location for No. 17 Cartwright, Cannon Survey, 1,500 feet southwest of Riverbed No. 1; No. 1 Dunning, northwest of the present Cartwright Field, has been completed as a gasser, total production unknown; No. 2 Sellers, J. McMullen Survey, 2,453 feet east of No. 1, is drilling at 800 feet. Henderson Coquat's No. 5 Sartain, Simms tract, western edge of county, at 1,297 feet, made 15,000,000 feet of gas. W. G. Clark's No. 1 E. S. Adair, J. McGloin Survey, 600 feet to south line and 5,100 feet east of Nueces River, at 2,150 feet tested salt water and is drilling deeper.

Medina County

Ralph R. Lewis and others' No. 1 Keller, Andrew Northington Survey No. 8, center of north line, has been abandoned at 2,372 feet. F. L. Williams' No. 1 John Fohn, Survey 115, east 100 acres, 300 feet to south and 175 feet to east line, in hard rock at 15 feet. Johnson's No. 1 August Mumme, Survey 100 due west of shallow pool, drilling at 1,100 feet, with about 200 feet in Austin chalk. J. H. Gray and others' No. 1 Louis Mann, Survey No. 16, 350 feet to north line of farm and west of river, resumed drilling at 947 feet. J. A. Swayze's No. 1 Oeffingers, Survey 129, Block 22, is drilling at 150 feet. Alamo Drilling & Leasing Co.'s No. 1 Kennedy, Survey 412, is drilling at 1,320 feet. Ina Oil Co.'s No. 1 Charles Fingers, Survey 746, is getting ready to drill in.

Maverick County

Ryan Consolidated Petroleum Co. has crew on hand assembling material for the first of three deep tests on the Indio ranch, 18 miles from Eagle Pass. Hume Lindenborne and associates, 3 miles from Eagle Pass on the De Bone ranch, have resumed drilling at 700 feet. Rycade Oil Co. has rotary up to mill out tools lost in the No. 1 Chittim at 5,525 feet; No. 2 Sullivan is drilling below 3,000 feet.

Menard County

Clark and others' No. 1 Kothman, Section 77, is drilling at 440 feet. Elliott & Lewis' No. 1 White, NW Survey 8, is fishing at 415 feet.

McMullen County

George Pickett on the Jacobs tract, north of the Calliham Field, has derrick up. George E. Pope's No. 4 Shiner, Survey 47, Block 46, 150 feet southeast of San Balt's No. 1, is drilling at 1,250 feet. Arkansas Natural Gas Co.'s No. 2 Franklin has been abandoned and hole is being plugged, total depth 3,000 feet.

Nueces County

Pearson and others have derrick up on the John Dunn tract on the south side of the bay for a test.

San Patricio County

W. L. Pearson and others have made location for No. 3 Cage, Rachael Survey, 1,200 feet south of No. 2, and also for No. 4 Cage, in the same survey, 1,200 feet north of No. 2. Huber & Crawford's No. 1 Huber-Crawford, Maedgen tract, Block 17, located 300 feet to northwest and 2,500 feet to southwest lines, is drilling at approximately 1,000 feet. Ed Leach at 500 feet made a water well of No. 1 Freeman.

Wilson County

Thomas and others' No. 1 August Haese, J. S. Moore Survey No. 124, 300 feet to northeast corner, is shut down at 780 feet for repairs.

CALIFORNIA FIELDS

(Continued from Page 64)

in the Seal Beach Field but there are eight or ten more on the verge of being completed. The Standard has four wells standing cemented above the pay and will begin swabbing another, No. 4 San Gabriel, for production tomorrow. [illegible] four of the Standard's wells at present standing cemented will be finished in the deep prolific Selover sand and will be followed by several more within a short time. The company's last completion was No. 3 San Gabriel, brought in 10 days ago flowing 1,985 bbls. from 4,707 feet. This well was a little slow in getting under way but has since built up to one of the largest producers. The last 24-hour tank gauge showed it to be making 2,950 bbls. of exceptionally clean 23.8 gravity oil with a consistent gas pressure of 800 pounds on the casing and 275 pounds on the tubing.

The Marland succeeded in bringing in No. 8 Bixby flowing 1,620 bbls. of clean 23.8 gravity oil daily from 4,410 feet, the top of the sand having been encountered at 4,340 feet. Two other wells are nearing completion and three more should be tanking oil within 30 days. The company killed No. 3 Selover, a recent completion, to add a little more hole as the initial output did not come up to expectations. This well is in proven territory and should result in a substantial production upon recompletion. No. 4 picked up the top of the pay a few days ago and a string of 8¼-inch is now being run in.

Huntington Beach

There were only two really good wells finished in the town lot section of the Huntington Beach Field, one by the Standard and the other by the Superior. The latter's contribution was No. 1 Jones, a recompletion after being plugged back from 4,412 feet to 3,542 feet. The initial 24-hour flow chart showed it to be making 750 bbls. of 21.6 gravity oil cutting approximately 5 per cent. The Standard's completion was No. 3 Pacific Electric, a new well but a stone's throw away from the Pacific. Its proximity to the ocean, however, was not reflected in the production as the cut was well under 1 per cent. This well, drilled to 4,350 feet and finished with a 6⅝-inch oil string carrying 700 feet of perforated, is flowing through a ½-inch bean under a pressure of 1,050 pounds, the initial production being 1,881 bbls. of 25.1 gravity oil daily. No. 1 Pacific Electric, on this property, is the largest producing well in the field, the output averaging a little better than 2,200 bbls. per day.

The Ahlburg Gasoline Co.'s No. 7 Horton was given a test in the shallow tar zone at 2,135 feet and, while some difficulty has been experienced in securing steady production, the well is capable of making approximately 75 bbls. daily. The Ahlburg interests have two other wells nearing completion in the lower sand and they should be followed by two more within a few weeks. The Julian Petroleum cleaned out No. 3 Lambert to bottom, 4,354 feet, and was returned to production doing 192 bbls. of clean 21.6 gravity oil daily. Hogan & Lytle also added a recompletion by redrilling and deepening No. 1 Huntington to 4,400 feet, from which depth it is doing 285 bbls. of 21.5 gravity oil. Paul Getty added two new producers by finishing Nos. 3 and 4, the former being drilled to 4,350 feet and the latter to 4,290 feet. No. 3 is a 70-bbl. pumper but No. 4 is making 205 bbls. daily, the installation of a compressor being responsible for the difference between wells. Most of the completions registered in the town lot area during the past several weeks have registered a considerably smaller initial than the output of their immediate predecessors and, unless the territory east of Seventeenth Street proves better than some anticipate, future work will be less productive.

Important Test

The San Martinez Oil Co.'s outpost on Ninth Street in the extreme eastern part of the town lot section is probably one of the most closely watched wells being drilled in the field. Its importance lies in the fact that if production is secured some five or six blocks of intervening territory will be drilled up immediately. The well is not yet deep enough to encounter the lower zone but the outlook appears quite favorable, the upper sand tying in quite closely with the first zone developed in the older section of the town

Link-Belt earns A. P. I. approval for SS-40 and SS-124 Chains

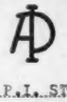
ORIGINAL NO. 1001

American Petroleum Institute

Certificate of Authority To Use Official Monogram

THE AMERICAN PETROLEUM INSTITUTE hereby grants to

LINK-BELT COMPANY, INDIANAPOLIS, IND.,

the right to use the following monogram  as specified in official publication of the American Petroleum Institute entitled A. P. I. STDS. NO. 7. First Edition, January, 1927, "A.P.I. Transmission Standards" (chain only),

adopted by the Board of Directors, on June 16, 1926, with the understanding that the use of this monogram is a representation that the material so marked complies with the said specifications, and provided further, that no materials which fail to comply with the said specifications shall be so marked.

The American Petroleum Institute reserves the right to revoke this license to use the above monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.

Issued at New York, January 31, 1927.

AMERICAN PETROLEUM INSTITUTE,

W. M. Boyd
Assistant General Secretary.

The American Petroleum Institute has adopted SS-40 and SS-124 as Standard Oil Field Drive Chains and now designate them as follows:

SS-40 and SS-40 Plus—as A. P. I. No. 3
SS-124 and SS-124 Plus—as A. P. I. No. 4

This award is additional recognition of the merit of Link-Belt Chain in the Oil Field

LINK-BELT COMPANY, INDIANAPOLIS, INDIANA

3027

LINK-BELT

NATURAL GASOLINE

from 22 plants in three states

FOLLOWING new fields with temporary plants and later, if conditions warrant, with permanent outfits, Skelly Oil Company has extended its natural gasoline activities to a total of 22 plants in the states of Oklahoma, Arkansas and Texas.

This widespread activity has many advantages. The most important one to the user of natural gasoline is that quick shipments may be made, and the exact grade wanted by the purchaser may be sent.

Skelly Oil Company is a well rounded organization, being exceptionally well organized in the five major activities of a balanced oil company: production, refining, making of lubricants, marketing and making of natural gasoline.

SKELLY

Skelly Oil Company

Tulsa, Okla.

Refinery: ElDorado, Kans. *Branches:* Kansas City, Mo.; Minneapolis, Omaha

lot area. The San Martinez is optimistic over the outlook and tied up several more lots during the past week, paying a small cash bonus for the lease. The Ring Petroleum has picked up some exceptionally good showings in its No. 7 Huntington between 3,645 feet and 3,890 feet and it is understood immediate preparations will be made to test out this horizon. The Superior Oil Co. evidently contemplates the spudding of several wells between the San Martinez test at Ninth Street and Ocean Avenue and the present eastern line of production around Sixteenth Street in the near future, as the company recently secured a permit from the city to lay four pipe lines through this entire district. The company's franchise covers the laying of two 5-inch oil lines, a 3-inch water line and a 3-inch line for the transportation of drilling mud. The Superior has a considerable number of lots under lease in this possibly productive area lying east of Seventeenth Street.

Long Beach

There were four wells put on production in the Long Beach Field but only one was of any particular importance. The most successful completion was No. 11 Haas of the Richfield Oil Co., drilled to 5,280 feet and finished with a 6¼-inch oil string carrying 1,356 feet of perforated. Flowing through a ¾-inch bean under a pressure of 800 pounds it registered an initial settled production of 2,390 bbls., the oil testing 25.7 degrees and showing a cut of less than 1 per cent. The Fisher Oil Co. put its No. 2 Dodge on a production test from the 3,032 foot level after finishing the hole with a 6¼-inch oil string carrying 120 feet of perforated, but it resulted in only a small pumper making 75 bbls. of 21.2 gravity oil daily. The Modoc Petroleum's No. 2 Italo was also a small pumper upon recompletion after being redrilled and deepened to 4,864 feet. The present pumping is running around 60 bbls. daily. The company has just finished No. 3 at 4,435 feet and it should result in better production. The Acme Petroleum redrilled and deepened No. 5 Dameron to 4,296 feet but the new work was not productive of a large well, as the initial output was only 110 bbls. of 23.2 gravity oil daily. The Julian Petroleum is filing an abandonment notice on No. 1 Peacock in the southwestern part of the field due to an unsuccessful recovery from a complicated fishing job. The company has spent several months endeavoring to effect a recovery but has decided to charge off the 4,120 feet of hole to profit and loss and will skid the rig to a new location nearby.

Dominguez

The Union finished No. 16 Callender in the Dominguez Field a few days ago but, notwithstanding the installation of a gas lift, the well is only making 120 bbls. of 28.8 gravity oil daily from 4,328 feet. The General Petroleum added a new producer on its Vaughn lease in the Rosecrans Field early in the week but it, like the Union's No. 16 Callender, was only a small producer. The General Petroleum's No. 5 Vaughn, drilled to 4,021 feet but plugged back and completed at 4,006 feet, started off at the rate of 350 bbls. a day but settled shortly thereafter and is being listed as a 140-bbl. well, the oil being exceptionally clean and testing 41.5 degrees. In the Torrance Field, the Chanslor-Canfield Midway Oil Co. added another small pumper by the completion of No. 61 Del Amo, brought in pumping 65 bbls. of 21.2 gravity oil daily from 3,623 feet. Although there are one or two drilling projects under way, the greater part of the work consists of clean-out jobs made necessary because of sand trouble and the difficulties usually experienced in producing heavy oil.

Operators in the Richfield district are making up for lost time resulting from the severe rains and due to the increased amount of drilling several new wells are expected to come into production soon. The Union should list several new producers shortly while the Standard, General Petroleum and Chanslor-Canfield Midway Oil Co. should also finish one or two new producers at about the same time. The Superior Oil Co. has started preparations to develop the Etchendey property adjoining the Chanslor-Canfield Midway Oil Co.'s Richfield holdings and actual spud should be made within 10 days. The Continental's No. 3 Kraemer at Richfield brought in early in the week following a preliminary production test of several days, is being listed for completion at 4,618 feet, from which it is flowing 120 bbls. of clean 24.8 gravity oil daily. The Shell, not having any productive acreage in the Richfield district, is concentrating its drilling operations in the Fullerton, or Brea Olinda area, where the company is running six strings of tools. No. 5 Pico in this area was put on a production test at 5,521 feet but the initial output, 265 bbls. of 25.2 gravity oil, has not yet cleaned up and this may result in some further work before it is a satisfactory completion.

Ventura

There were no new wells finished in the Ventura Avenue Field but, as several potential producers are being prepared for early tests, it appears probable a new well or two will be listed for completion during the coming week. The Associated has several promising looking holes but no one showing more than the usual kick. The company's No. 1 Ventura Land & Water, brought in about 10 days ago flowing 2,336 bbls. daily, built up a little and is making 2,360 bbls. of clean 29.6 gravity oil and approximately 2,000,000 feet of well-saturated gas daily. The Shell supdded in two new holes on its Taylor lease and has about finished reaming out No. 15 Taylor preliminary to the running in of the oil string. The company also started work on a new well on the Edison lease, No. 14, and since the rig for No. 15 was finished some time ago this well may also be spudded in shortly.

The General Petroleum is experiencing some little difficulty in packing off No. 2 Barnard to kill the extremely high gas pressure at 6,069 feet and, judging by the kick this well had displayed it should result in a very satisfactory completion within two weeks. The General Petroleum's two latest spuds in this district are Nos. 12 and 15 on the Barnard lease, both down approximately 700 feet. The Bolsa Chica has foundation in for a new well on the Barnard property, a small lease adjoining its Hartman holdings, and spud will probably be made within 15 days. The company expects to finish its second commercial producer on the Hartman property within 30 days and it is likely a new well will be started on this lease immediately thereafter.

Midway-Sunset

Although there were no wells actually finished in the Midway-Sunset area, several new holes were spudded in and preliminary preparations started for completing several of the drilling projects. The Gore Oil Co. has four wells in Section 21-31-22, about ready to go on the beam in the shallow sand encountered around the 1,000 foot level and they may all be listed for completion within a few days. The Standard is making preparations to put three wells on production tests and they will be followed by two more. The General Petroleum and George F. Getty both increased their drilling program on the Kern front and each should finish another new well or two during the coming week. The Barnsdall's No. 2 Vedder in the Mount Poso area is not showing up as well as might be expected at 2,120 feet. The California Petroleum is abandoning No. 1 McNiel in this district, section 34-26-27, as a duster at 4,400 feet and the granitic formation encountered precludes any further attempt. Drilling work in the Mount Poso area has been going along very conservatively since this field was opened up by the Shell as the field produces a heavy oil undesirable at present. Adequate pipe line facilities are expected to be laid during the coming summer, although nothing definite has been decided.

Southern California Wildcats

The most important area in Southern California is the Potrero district where the Associated has a wildcat cemented in what is reported to be a promising oil sand at 4,450 feet. The Julian Petroleum has not yet encountered the sand

This is No. 31 of a series on specifications—keep for reference in ordering.

BARSCO PRODUCTS

for Oil and Gas Well Drilling

Forged ***Steel***

Rotary Saw Tooth Shoes for rotary system, punched from *forged steel*, not welded. The cutting edges are especially tempered and can be hardened to any specifications. Standard and intermediate sizes.

Size Pipe for, in.	4	4	4	4½	4½	6	6	6¼	6¼	6¼	6⅝
Length, in.	12	14	16	12	16	14	16	12	14	16	12
Weight, pounds	20	25	30	25	30	45	50	40	45	50	33

Size Pipe for, in.	6⅝	6⅝	8¼	8¼	10	10	12½	12½	15½	15½	20
Length, in.	14	16	14	16	14	16	14	16	14	16	16
Weight, pounds	30	35	60	65	80	85	125	135	160	170	275

Intermediate sizes, also sizes larger or smaller than listed can be furnished.

Note:—Smallest inside measurement is the same as inside diameter of pipe or casing on which shoes are to be used. In ordering, give size, weight, pitch of thread and make of casing on which shoe is to be used and also size and weight of casing through which shoe is to pass.

BARSCO line of casing shoes includes "Bloom Pattern"—"Regular Pattern"—"Baker Pattern." ***There's a BARSCO Casing Shoe for every requirement.***

Stocks carried by Dealers.

BARTLESVILLE SUPPLY COMPANY of Missouri
3400 MAURY AVENUE—ST. LOUIS, MISSOURI
Export Office: 2 Rector St., New York City

Manufacturer's Representatives

B. & A. Specialty Co., Tulsa, Okla. | Robert J. Miller Co., Houston, Tex. | Miller Tank & Supply Co., Casper, Wyo.

—Write for Complete Catalog

THERE'S A GILFILLAN

FOR

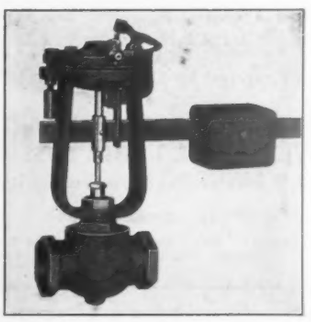
Every Steam Pressure

From ZERO to 200 Pounds

Introducing

THE GILFILLAN DUAL CONTROL VALVE

A Gilfillan Dual Control Regulator controls the gas pressure on the fuel line and the steam pressure on the boiler. HENCE DUAL CONTROL.



GILFILLAN MACHINE WORKS, Inc.

Ebenezer, N. Y.

Write for Literature

picked up by the Associated notwithstanding it is nearly 400 feet deeper. These two wells are 1,500 feet apart and the failure of the Julian Petroleum to find sand will undoubtedly result in the shifting of operations from the present area southeast of the Associated's test to the district northwest. The General Petroleum's wildcat, almost due east of the Associated's wildcat and north of the Julian's test, is not deep enough to pick up the pay but something interesting should develop during the next ten days if this well is to result in commercial production.

The Union has not yet picked up anything in its No. 1 Moser, west of the northern part of the Rosecrans Field, and the outlook at 5,280 feet is not any too promising, although the well cannot yet be consigned to the doubtful list. No. 1 De-Baker of the Petroleum Securities at Bandini is rotating ahead in a hard gray sand at 5,302 feet with all the earmarks of a duster. George W. Johnson will make another production test on his No. 1 Wickham in the Newhall-Saugus area within a few days, and while this wildcat appears to have a fairly good chance of securing production its completion is not assured. The Petroleum Securities has about finished rigging up No. 1 Weston in the Palos Verdes district.

Northern California Wildcats

Hoyt S. Gale's Bakersfield wildcat will undoubtedly be watched very closely from now on. Progress will no doubt be somewhat slower as the taking of numerous cores will have a tendency to reduce the footage made daily. Several additional leases were consummated in the vicinity but they were acquired for protection purposes only and will probably not be drilled up unless Gale finds something interesting. The California Petroleum recently leased some 51 lots in the Chester Park tract on a one-eighth royalty basis, the lease calling for work within three years. The Union did not succeed in developing any production in its No. 1 Colm, west of the Belridge Field in Section 24-28-20 from the 672-foot level where a tar zone was encountered and drilling is being resumed. The Milham is making fairly fast footage on its Buttonwillow wildcat. The McAdams Petroleum Co. drilling a test in Section 2-30-22 encountered a considerable amount of gas around the 3,200-foot level and preparations are being made to land a string of pipe on bottom.

The Associated is abandoning its second wildcat near Huron in Fresno County at 2,506 feet and the equipment is being moved out. The Richfield Oil Co. will spud in a wildcat soon on the Carrizo Plains some 28 or 30 miles west of McKittrick where the company has leased approximately 3,000 acres including the Wreden Ranch, upon which a rig has been erected. This is a virgin area, the nearest well being drilled some 5 or 10 miles away. The Marland Oil Co. is making good progress on its Jacalitos Dome wildcat but since this district requires deep drilling nothing is expected above the 5,000 foot level. The Shell completed negotiations for leasing about 1,100 acres, 2 miles north of Camarillo in Ventura County and, while no details have been released, the area will probably be tested out during the summer.

ARTESIA, N. MEXICO

(Continued from Page 57)

50 miles west of here, is attracting the attention of major company pateontologists. It is believed the fossils are in the San Andreas lime.

DRILLING REPORT

Eddy County

Clark & Grimm's No. 1 Daugherty, NE SW Section 3-17-27, drilling below 820 feet; Compton's No. 3 Mann, SE Section 3-18-27, drilling; Compton's No. 2 State, NW Section 2-18-27, drilling 220 feet; Empire Gas & Fuel Co.'s 2-A Russell, SW SE Section 34-17-27, drilling below 1,100 feet; Empire Gas & Fuel Co.'s No. 3-A State, NE NW Section 2-18-27, below 950 feet; Empire Gas & Fuel Co.'s No. 1-B Russell, SE NE Section 34-17-27, drilling below 575 feet; Hamilton Petroleum Co.'s No. 1 Billings, Section 12-19-26, no report; Hammond Oil Co.'s No. 1 NW SE SW Section 15-16-25, 12½-inch casing set at 800 feet, drilling resumed; Kelly's No. 1 Berry permit, NW NW Section 27-17-27, drilling below 300 feet; Lackawanna Oil & Refining Co.'s No. 1 NE SE Section 17-16-27, drilling below 1,415 feet; Lackawanna Oil & Refining Co.'s No. 7, C NW SE Section 21-18-28, drilling below 600 feet; Levers, Carper No. 5, NW cor. Section 3-18-28, drilling below 1,030 feet; Marland Oil Co.'s No. 1, CWL Section 11-20-30, drilling at 400 feet; Navajo Oil Co.'s No. 1, NE NW Section 32-17-27, shut down; Ohio Oil Co.'s No. 1 Marland, SW SW Section 13-22-29, drilling below 2,000 feet; Midwest Refining Co.'s No. 1 Terry, SW NW Section 15-18-27, location; Ohio Oil Co.'s No. 8 Toomie, Allen, SE Section 28-18-28, cleaning out after shot; Pueblo Oil Co.'s No. 1, C SE Section 26-17-29, location; Pueblo Oil Co.'s No. 1, NW cor. Section 34-17-29, location; Prairie Oil & Gas Co.'s No. 1 Keel, SE SE Section 10-17-31, shut down at 3,850 feet; Pierce Oil & Gas Co.'s No. 4, NW cor. SE SE Section 12-18-17, location; W. A. Stone Oil Co.'s No. 1 Hnulik, SW cor. NW NW Section 25-17-26, rigging up; Skelly Oil Co.'s No. 1 Lynch, Section 22-17-31, capped; Bruce Sullivan's No. 1, SW cor. Section 1-18-31, shut down; The Texas Co.'s No. 1, SE cor. Section 34-16-31, rigging up; Woolley & Jones' No. 1 Beeson, SE cor. Section 33-17-30, shut down; Woolley & Jones' No. 1 McIntyre, C SE Section 21-17-30, drilling below 3,030 feet.

Chaves County

Arena Oil Co.'s No. 1, SE Section 24-13-30, building road to lease; Delmar Oil Co.'s No. 1, Section 22-11-26, down 1,320 feet; Gibson Oil Corp.'s No. 1 Forsyth, C NE Section 8-11-23, shut down temporarily at 675 feet; Hall No. 1, NW Section 8-14-24, shut down at 1,580 feet; The Texas Company's No. 1, Dunken Dome, SW Section 29-17-18, shut down at 3,400 feet awaiting wire line.

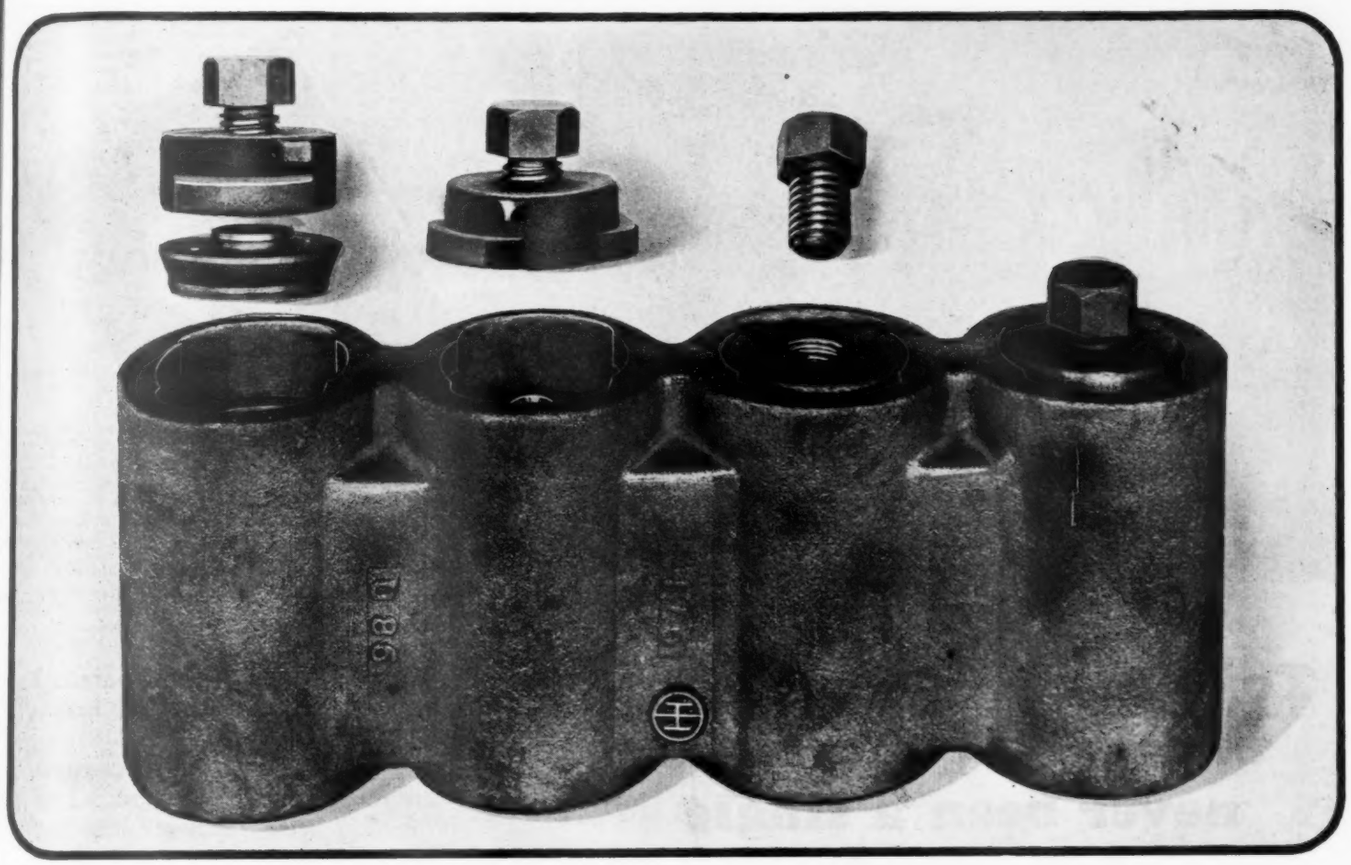
Lea County

Cap Rock Oil & Gas Co.'s No. 1, SE Section 11-16-32, shutting off surface water at 750 feet; Covert No. 1, NE NE Section 15-21-33, underreaming at 1,835 feet; Exploration company's No. 1, NE Section 25-19-35, drilling at 800 feet; Henderson, Dexter & Blair's No. 1 Wyatt, SW SW Section 34-17-33, shut down at 4,505 feet; Ingelfield & Bridges' No. 1, Section 4-17-34, drilling below 4,700 feet; Maljamar Oil & Gas Corp.'s No. 1 Sterling S. Beardsley, SW SW Section 15-17-32, rigging up; Gibson Oil Co.'s No. 1, SW NE Section 29-13-37, location; Grace Mitchell No. 1, SW cor. Section 5-17-32, shut down at 4,203 feet, rebuilding derrick; Ohio Oil Co.'s No. 1 William Mitchell, NE cor. SW Section 18-17-32, drilling below 4,190 feet; T. P. McDonald No. 1, NE Section 22-18-34, shut down at 210 feet; Texas Production Co.'s No. 1 Jackson, SE cor. Section 4-20-34, moving material; Texas Production Co.'s No. 1 Rhodes, NW Section, 22-26-37, moving material.

LA.-ARK. WILDCATS

(Continued from Page 54)

set at 92 feet and Garrett and Modisette Drilling Co.'s No. 1 Union Saw Mill, Section 7-18-13, is drilling ahead at 1,000 feet. Southeast of El Dorado, Grimes and Jones' No. 1 Williams, Section 8-18-14, is standing with a hole full of fluid from sand at 2,215-35 feet and is being put on the beam. Drillers are milling 525 feet off bottom at 2,651 feet at Marine Oil Co.'s No. 1 Thompson, Section 10-18-13. Marine Oil Co.'s No. 1-B Thompson, 200 feet north and west, SE cor NE, Section 10-18-13, is a rig and location has been staked for the same company's No. 1-B Winn, SE cor., Section 10-18-13. The eight-inch plug at 2,511 feet is being drilled at Ohio Oil Co.'s No. 1 Crain, Section 1-17-14. J. W. Olwery's No. 1 Simmons, NE cor., Section 15-18-13, is a derrick. Twelve and one-half inch casing was set at 197 feet at Rovenger Oil Corp.'s No. 1 McCain, Section 4-17-14. Simms Oil Co's No. 1 Ballard, Section 9-18-13, is making 450 bbls. of salt water and 30 bbls. of oil from sandy shale at 2,551-56 feet



THE OHIOLOCK PLUG—A Quicker Acting Closure

See that this Trade Mark is in the Vital Spot of your Pressure Units

Any reduction in the time required to close down your stills and clean out the tubes represents a real saving.

That is where the "OHIOLOCK" plug can help you reduce costs, and get more actual operating time from your units. Its quicker action cuts this time of shutdown to an absolute minimum.

The application is simple. Just insert the plug, a quarter turn to the right locks it in position, then tighten the set screw and the job is done. Compare this simplicity and ease of operation with the slow difficult application of a screwed or tapered plug.

There is just as much or more difference in the removal. The improved plug has no threads to leak, corrode, stick or become damaged in handling.

This closure is locked in place and cannot loosen up in service. It has greater strength than ordinary types and will meet any pressure condition.

Learn more about "OHIOLOCK."

The Ohio Steel Foundry Co.

Springfield, Ohio

Pioneers in Return Bends for Pipe Stills

SALES OFFICES:
Houston—Harrisburg Pipe & Pipe Bending Co. of Texas
Chicago—Peoples Gas Bldg.
New York—75 West St.
Philadelphia—22 So. 15th St.
Los Angeles—4920 Loma Vista Ave.

PLANTS IN
Springfield
Lima

To our best knowledge and belief, there has never been a single failure of—

BITUMASTIC

Reg. U. S. Pat. Off.

ENAMEL

—when properly applied for the protection of—

STEEL WATER MAINS OIL LINES OR NATURAL GAS LINES

WHEN oil and gas lines are laid in corrosive soil, the breakdown of protective coatings has so frequently occurred that a contrast with the BITUMASTIC record of protection seems almost unbelievable.

BITUMASTIC is a coating used for more than forty years for the protection of steel ships and marine structures in all sections of the world. It has been used to protect many of the large steel water mains laid in this country in the last eleven years. It was first applied for the protection of oil lines some fifteen years ago and has since been used to coat several other important oil and natural gas lines.

Despite this usage, under all possible conditions of soil, water, electrolytic and chemical attack, we have never had a single failure reported where this long-lived enamel has been properly applied.

Would not the use of so dependable a coating solve many of your own pipe line problems? Write for a complimentary copy of our book—"The Protection of Pipe Lines"—and read the whole story.

WAILES DOVE-HERMISTON CORPORATION
17 Battery Place, New York
Tulsa, 1 North Frankfort St.

Philadelphia **Cleveland** **Chicago** **San Francisco**

and the working barrel is to be changed before completion. Ten-inch casing was set at 155 feet and Superior Oil Co.'s No. 1 Jerry, Section 32-17-13, is drilling at 1,050 feet.

Ouachita County

The hole was junked at 1,748 feet at A. T. Grayson's No. 1 J. W. Reynolds, Section 21-14-17, and the derrick is to be skidded over for the second hole. J. E. Reynolds' No. 1 Chandler estate, Section 3-14-18, is drilling to 1,560 feet.

Bradley County

Magnolia Petroleum Co.'s No. 1 Arkansas Timber Co., Section 33-15-11, is drilling hard sand at 4,150 feet. The drill stem stuck at 1,530 feet at Johnston and Adams' No. 1 Southern Lumber Co., Section 12-12-12, total depth, 1,550 feet.

Clark County

Whelan Oil Co.'s No. 1 Burrow, SW cor. NE NE, Section 35-10-20, is a rig.

Drew County

Shaffer Oil Co.'s No. 1 Garland, Section 23-10-25, is drilling at 1,725 feet.

Lafayette County

Ten-inch casing was set at 60 feet and T. R. Brown's No. 1 Thomas, Section 15-16-23, is shut down at 1,423 feet for orders.

Lincoln County

Pine Prairie Oil Co.'s No. 1 Carter, Section 33-10-6, is drilling at 225 feet.

Miller County

Lenz and associates' No. 2 Dale, Section 28-15-26, is shut down at 2,765 feet.

Bossier Parish

In and around the Carterville area several tests are in some stage of drilling. Bahan and associates' No. 1 Mays, Section 27-23-12, is drilling shale at 2,840 feet. Bethany Oil & Gas Co.'s No. 1 Dodson, Section 16-23-12, is drilling shale at 2,300 feet. Clark and Norton's No. 1 Ford, Section 32-23-13, is drilling shale at 1,500 feet. Twelve and one-half inch casing was set at 448 feet at Louisiana Oil Refining Corp.'s No. 1 Blanton, Section 23-23-12. Magnolia Petroleum Co.'s No. 1 Dodson, Section 15-23-12, is being rigged. Woodley and Collins' No. 2 L. & A., Section 14-23-12, is drilling shale at 3,010 feet. Southwest of Bellevue, Harrell Drilling Co.'s No. 1 Atkinson, Section 2-18-12, is drilling at 400 feet. Simms Oil Co.'s No. 2 C. D. Sandidge, Section 5-18-11, is a derrick.

Caldwell Parish

Humble Oil & Refining Co.'s No. 4-A Louisiana Central, Section 12-11-2e, is being rigged.

Catahoula Parish

Four and one-half inch casing stuck 100 feet off bottom at 3,093 feet at Lochnager Oil & Gas Co.'s No. 1 Beasley, Section 26-9-6e. Drillers are lubricating with oil.

Claiborne Parish

Magnolia Petroleum Co.'s No. 1 C. C. Lee, Section 16-22-8, is drilling at 2,400 feet. Mitchell and Jansen's No. 1 Wilburn, Section 23-19-7, is drilling at 1,900 feet. Standard Oil Co.'s No. 1 Mitchell, Section 29-21-7, is drilling gumbo at 2,062 feet.

DeSoto Parish

Graize and Hintze's No. 1 Riggs, Section 27-14-13, is drilling shale at 2,365 feet. Dixie Oil Co.'s No. 1 Jenkins, Section 9-12-11, is drilling lime at 5,125 feet. Magnolia Petroleum Co.'s No. 1 Mason, Section 28-12-11, is drilling at 2,715 feet.

Franklin Parish

Arrangements are being made to set 8-inch casing at 400 feet to shut off surface water at Exploration Co.'s No. 1 Moore, Section 12-11-6e, total depth 2,111 feet.

Grant Parish

Gulf Refining Co.'s No. 2-A L. C. Swope, Section 17-9-1e, in the Georgetown area, was completed in sand at 1,603-07 feet and is being produced with air. The well is making 1,500 bbls. of fluid, 150 bbls. of oil and the remainder salt water. It is the best completion in the Georgetown area. Gulf company's No. 3-A L. C. Swope, Section 2-9-1e, is drilling broken rock at 2,120 feet. Location has been made by the same company for No. 1-B L. C. Swope, 1,520 feet west and 200 feet east SE cor., Section 1-9-1w. Paulette and Associates' No. 1 Holmes, Section 17-9-1e, is drilling at 1,400 feet and 10-inch casing was set at 100 feet. Ten-inch casing was set at 120 feet at Rue and associates' No. 1 Elias and Williams, Section 10-7-4w. The Texas Company's No. 2 Swope, Section 16-9-1e, is being cored at 1,580 feet.

LaSalle Parish

Tunica Petroleum Co.'s No. 23 L. & A., Section 9-7-2e, is shut down for orders at 900 feet. Tunica company's No. 25 L. & A., 330 feet south and east NW cor. NE NW, Section 8-8-3e, is being rigged.

Natchitoches Parish

Lawson and Pharris' No. 1 Clark & Morse Lumber Co., Section 23-5-6w, tested a little gas and a slight show of oil at 2,528 feet. Ohio Oil Co.'s No. 1 L. & A., Section 23-13-6w, is drilling rock at 2,745 feet. The rig was moved and J. F. Palmer's No. 1 Edenborn, Section 4-11-6, was abandoned at 2,015 feet. E. O. Readheimer's No. 1 Wafer, 1,370 feet west and 1,770 feet north SE cor., Section 3-11-8, is a rig. Tunica Petroleum Co.'s No. 24 L. & A., 330 feet north and 150 feet east C, Section 35-13-6w, is a rig.

Red River Parish

Amerada Petroleum Corp.'s No. 1 Long Bell Lumber Co., Section 5-13-9, is a rig. Ten-inch casing was set at 295 feet and Gulf Refining Co.'s No. 37 E. T. Robinson, Section 25-13-11, is drilling chalk rock at 1,035 feet. Ten-inch casing was set at 102 feet at Magnolia Petroleum Co.'s No. 24 Polly, Section 6-12-10. Same company's No. 14 Foursome, Section 7-12-10, is waiting for a standard rig at 2,620 feet. Ten-inch casing was set at 190 feet at Phillips Petroleum Co.'s No. 1 Long Bell Lumber Co., Section 16-12-6. The Texas Company's No. 35-B Brinkenhoff, Section 30-13-10, tested dry at 2,488 feet and is shut down for orders.

Richland Parish

Gulf Refining Co.'s No. 1 Marshfield, Section 30-17-6e, is drilling lime at 2,257 feet. Gulf company's No. 2 Rhymes, 660 feet east and 1,420 feet south NE cor., Section 5-16-6e, is a rig. Same company's No. 1 Seibert, 1,995 feet east and 1,485 feet south NW cor. Section 35-17-6e, is a derrick. Gulf company's No. 1 Wayne, Section 36-17-5e, is drilling shale at 2,157 feet. Sam D. Hunter's No. 1 McCoy, Section 29-16-6e, is drilling gumbo at 1,935 feet. The drill stem is being sidetracked at 2,344 feet at Hunter's No. 1 Siebert, Section 1-16-5e, total depth, 2,358 feet. A derrick is up for Sam D. Hunter's No. 2 Siebert, 1,320 feet south and 6,085 feet west NE cor., Section 12, in Section 11-16-5e. Louisiana Petroleum Co.'s No. 1 Hicks, Section 22-17-6e, tested 2,000,000 feet of gas at 2,438 feet and is waiting for orders. A derrick is up for Ruston Drilling Co.'s No. 1 Earle, 1,366 feet south and 855 feet east NW cor. NE NW, Section 5-16-6e. Same company's No. 1 O'Neil, Section 35-17-6e, is drilling gumbo at 2,353 feet. Standard Drilling Co.'s No. 1 Delta Hardwood Co., Section 22-14-7e, is a rig. Stovall Drilling Co.'s No. 1 Mitchell, Section 20-17-6e, is waiting for 12½-inch casing to set at 192 feet. Texas-Louisiana Carbon Co.'s No. 1 Broughton, Section 1-15-6e, is drilling gumbo at 1,255 feet.

Sabine Parish

In the Pleasant Hill district, Arkansas Fuel Oil Co.'s No. 3 Logan Oil Co., Section 33-10-12, is drilling chalk rock at 1,879 feet; 10-inch pipe was set at 207 feet and No. 4 is drilling at 1,400 feet, and No. 5, in Section 28-10-12, is drilling chalk rock at 1,662 feet. A derrick is up for Beckman and Freeman's No. 1 Logan Oil Co., 1,170 feet south and 150 feet east C, Section 28-10-12. Ten-inch casing was set at 200 feet at Moffitt and associates' No. 1 Moore, Section 5-9-12. Twelve and one-half inch casing was set at 207 feet at Ohio Oil Co.'s No. 1 Cook Land Co., Section 34-10-12. L. M. Emlet's No. 7 H. L. Bowman, Section 14-7-14, is being reamed to the bottom at 2,623 feet to make a test of the chalk rock. Magnolia Petroleum Co.'s No. 1 L. L. L. L. Co., Sec-

TIDAL
REFINING COMPANY

The Jobbers' Source
of Supply of all
Grades of Gasoline

-:-

High Grade Kerosene

-:-

Furnace Distillate

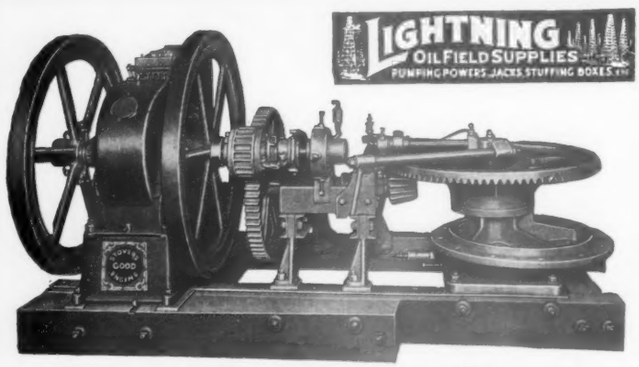
-:-

Zero Test Fuel Oils

-:-

Wire Us for Prices

TIDAL BUILDING
TULSA, OKLA.



Latest Lightning No. 3 Pumping Power

All Powers Equipped With Famous Stover Engine

The Lightning No. 3 power is similar to our No. 2 but is more powerful and a higher-grade machine throughout. Inverted drive gear forms its own guard. Rod lines actuated by broad-faced eccentric, same as used on band wheel powers, delivers a full 18" stroke. Main eccentric shaft 4¼" diameter, supported at both ends. Hub has bearing 17" long, lubricated by a positive acting plunger pump which draws oil out of the base and delivers it into the top of the eccentric hub. This oil also is fed into the eccentric and passes back into the base and is used over again. The engine is also equipped with a positive lubricating system of its own.

WEIGHT

Belt Drive—24 to 28" pulley, 280 to 300 R. P. M. ..... 2700 lbs.
Engine Power—12 H. P., direct connected, Madison Kipp Lubricator ..... 5550 lbs.

Manufacturers of

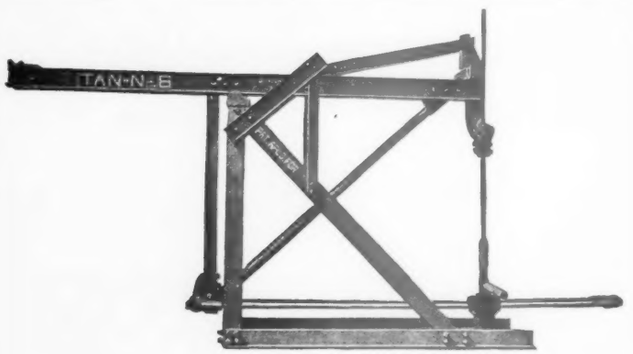
Pumping Powers, Geared and Band Wheel; Steel Grips, Polished Rod Rotators, Casingheads, Polish Rod Clamps, Rod Racks, Balanced Pumping Jacks, Centrifugal Pumps, Beam Yoke Castings for Wire Line Hangers, Beam Hangers, Sucker Rod Spiders, High Speed Elevators, Stuffing Boxes, Hooks and Grips.

Distributors:

Grover C. Johnson, Wichita Falls, Texas
B. V. Emery & Co., Tulsa, Oklahoma
Mid-Continent Supply Co., Fort Worth, Texas
Harry B. Shine, Houston, Texas
All Republic Supply Stores
All Putnam Supply Co. Stores
All International Supply Co. Stores

Write for showing of full line.

KANSAS CITY HAY PRESS CO.
Oil Field Supplies **Kansas City, Mo.**



Good Jacks

WE THINK we make corking good Jacks. And considering the difference in opinions on any subject, an astounding number of Oil Men agree with us.

Some one of our Jacks is exactly fitted to handle each one of your wells, and if you'll take it up with us, or with the Frick-Reid Store in your field, we'll dope out together which one it is.

We illustrate here our new Titan. It is a Straight Lift Under Pull Jack with six and one-half feet of straight line motion, and a working stroke of five feet. It's a peach. It is strong and simple, and operates without any vibration to cause rod trouble or stuffing box wear.

Send for our catalog.

JENSEN BROTHERS MFG. CO.
Nowata, Oklahoma

All Frick-Reid Stores sell Jensen Jacks

tion 11-6-11, is drilling gumbo at 2,990 feet.

Winn Parish

Greer and Gault's No. 1 Bodcaw, Section 9-11-4w, is drilling at 2,820 feet. Humble Oil & Refining Co.'s No. 19-A L. & A., Section 31-10-2w, is drilling at 790 feet. Ohio Oil Co.'s No. 2 Edenborn, Section 4-12-1e, is drilling lime at 4,217 feet. Standard Oil Co.'s No. 1 Tremont Lumber Co., Section 1-12-2w, is drilling rock at 2,926 feet.

CANADIAN FIELDS

(Continued from Page 63)

sible an arrangement may be made by the Canadian Western company with Imperial Oil, Ltd. for a deep test for oil by the latter company in the Foremost Field.

East of Coutts

East of Coutts, Imperial Oil, Ltd.'s No. 1 Erickson Coules, LSD 13, Section 8-1-12w4 is reported at 3,342 feet and drilling. In the Bow Island Field, Imperial-Burdett's No. 1, Section 8-11-11w4 is drilling at 3,512 feet. In the southern foothills, the Imperial-Highwood's No. 1, LSD 3, Section 36-18-3w5, is at 1,940 feet and straightening hole. On the Ribstone structure in east central Alberta, Imperial-Ribstone's No. 1, Section 5-45-1w4, is at 2,360 feet and drilling.

In the Turner Valley Field, southwest of Calgary, Royalite Oil Co.'s No. 7 LSD 3, Section 13-20-3w5, has resumed drilling at 170 feet after changing to a rotary outfit. Royalite Oil Co.'s No. 6, LSD 16, Section 31-19-2w5, is resuming work at 3,114 feet after cementing.

New McDougall-Segur, LSD 14, Section 12-20-3w5, in the Dakota sand at 2,595 feet is maintaining a production of 120 bbls. of light crude a day. Owing to a breakdown of the pump it has been necessary to continue the production test by bailing. It is expected the well will be finished at this horizon.

Illinois-Alberta Oil & Refining Co., LSD 14, Section 12-20-3w5 is laying 700 feet of additional 6-inch pipe line, with a drill to handle the wet gas, with a view to increasing the crude naphtha production; and safety valves are being installed so that the back pressure can be increased from the present figure of 600 pounds. The well is making about 125 bbls. a day from the Madison limestone at 3,858 feet.

McLeod Oil Co.'s No. 2, LSD 16, Section 1-20-3w5 has finished a fishing job and is again drilling in the Madison at 3,835 feet. The well is reported making less gas and more crude naphtha. McLeod's No. 3, 200 yards west of No. 1 and on the same LSD, has spudded in and is running single tower till No. 2 is finished. Vulcan Oil's No. 1, LSD 11, Section 13-20-3w5 is maintaining a steady production, around 140 bbls. a day. Vulcan's No. 2, same LSD, is working on derrick. Spooner Oils' No. 1, LSD 12, Section 13-20-3w5 is at 2,900 feet and fishing for lost tools. Some of the casing dropped 2 feet and had to be swedged out. Spooner's No. 2, Section 24-20-3w5 will be rigged up as soon as Vulcan's No. 2 spuds in.

Dalhousie Oil Co.'s No. 1, LSD 4, Section 18-20-2w5 is at 3,600 feet and has finished cementing the 120 feet of open hole below the 6¾-inch. Dalhousie's No. 5, LSD 16, Section 30-19-2w5, is at 3,375 feet and drilling for the 8¼-inch casing. Dalhousie's No. 6, LSD 10, Section 13-20-3w5, is drilling at 1,955 feet and carrying 12½-inch casing.

Stockmen Oils' No. 1, LSD 1, Section 27-20-3w5 is at 3,690 feet and apparently drilling in the Kootenay formation. The drilling seems to have crossed a fault and is now on the east side of it, passing through a second band of the Dakota formation 100 feet thick. It is expected the Madison limestone will be reached between 4,300 and 4,650 feet. A heavier boiler is being installed.

Other Operations

Calmont Oils, LSD 2, Section 1-20-3w5 is at 3,064 feet and running 10-inch casing. Dallas Oil Co., LSD 11, Section 20-19-2w5, will move the derrick and outfit from No. 1, abandoned at 3,100 feet, to No. 2, same LSD, as soon as weather improves.

British Dominion Oil Co., LSD 4, tion 5-20-2w5 has resumed drilling 4,550 feet after running 8¼-inch ca In the recent drilling several small shows were met. New Valley Oil LSD 4, Section 6-21-2w5, shut dow 1,550 feet for the winter, is getting shape to resume as soon as the wea moderates.

Home Oil Co.'s No. 1, LSD 10, Se 20-19-2w5 is at 3,380 feet and dril The well is 175 feet in the calca shales, and about one-third through formation. Gas from the upper hori is being used to fire the boilers. Se Oils, LSD 1, Section 34-20-3w5, down through the winter owing to w shortage, is getting ready to resume d ing at 2,706 feet. New Black Diam LSD 1, Section 3-20-3w5 is hauling 12 inch casing from Okotoks, and will sume drilling early in April, at 12 feet.

Regent Oil Co. which has a derrick LSD 16, Section 1-20-3w5 for a test setting McLeod's No. 2, has taken the unfinished well, drilling outfit part of the acreage of Highland Ltd. Highland Oils has an unfinish test in LSD 5, Section 5-20-2w5, wh has been shut down at 3,020 feet. T is in what has been proved by other te to be an extra-deep drilling area, which is now being tested by the Brit Dominion, with a well down 4,420 fe and not yet in the limestone. The ac age acquired by the Regent includes t 16 acres on which the Highland well situated, and 280 acres comprising LSD 3, 4, 5, 6, 11, 12 and 14 in Section 3 19-2w5. The Highland rig is being mov to the Regent location in LSD 16, Sectio 1-20-3w5, where the Regent some tim ago secured from the Canada Southe Oil & Refining Co. the southeasterly 1 acres offsetting McLeod's No. 2. Th Regent test on this location will be car ried 5,000 feet if necessary.

Madison Oil Co. which has a test spot ted in LSD 8, Section 34-20-3w5, has s cured the remaining 30 acres in the sub division, Madison's No. 1 will start drill ing in April. Mill City Oil Co. has test located in the north end of th Turner Valley, in LSD 2, Section 34-2 3w5 and will drill this spring.

Stoney Indian Reserve

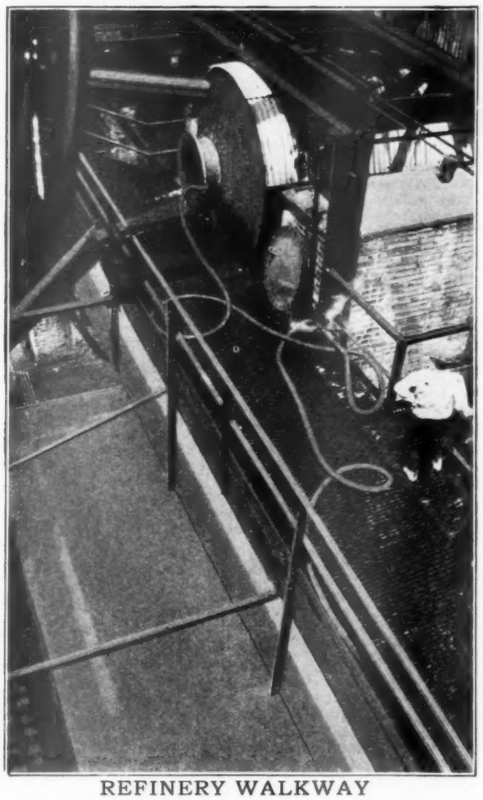
Some new activity is likely this spring on the Stoney Indian Reserve near Mor ley, where three tests are already under way and a fourth has been located. Gol Coin Oils is reported at 1,476 feet and underreaming to run casing to the bot tom of the hole. This test is new in the Benton shale, and may get production in the Dakota sand. Wabash Oils is in the Kootenays at 200 feet, and drilling. Re serve Oils of Calgary had an unfinished test shut down at 1,877 feet. This is a diamond drill test, put down by J. H. Norman. The latter, with a group of Calgary men, has now taken over the unfinished well with an 80-acre lease, in satisfaction of an outstanding claim under the drilling contract; Reserve Oils, Ltd. receiving in return the adjacent 80 acres. The cost of drilling to the present depth is estimated at $13,000; the well will be deepened by the new owners. Work will be resumed early this spring.

Western Ridge Oil Co. is arranging for a test to be started this spring. Chiniki Holding Co. has made a location. Acreage in the Reserve area is held by Calgary-Ozada Petroleum Syndicate, Mc Donald & Rodgers, Nat Lea and associates, F. M. Graham and Morley syndicate. Some of these will probably drill this season.

The Stoney Indian Reserve is owned by the Stoney tribe, numbering about 600. Leases are granted by the Indian council with the approval of the Indian Department at Ottawa. The leaseholders pays $1 per acre rental, per year, and a 10 per cent royalty on all oil and gas production; rentals ceasing when the royalty exceeds $1 per acre. Some 40,000 acres are now under lease, representing an annual revenue of $66.66 per capita to the members of the tribe.

The structure is one of the numerous

(Continued on Page 197)



REFINERY WALKWAY

Arrowhead Grating

is being used extensively in pumping stations and refinery construction—Type A for walkways and Type H around cracking process stills. ARROWHEAD insures a safe footing, its design eliminates the side slip, so noticeable in most floor gratings.

Thousands of ARROWHEAD TREADS are being used in refinery work. They are strong, durable, and easy to install.

Send for our catalog

Arrowhead Iron Works, Inc.

431 West 5th St.
KANSAS CITY, MO.

Wagner Quality

Motors and Transformers for the Petroleum Industry

WE make motors and transformers for almost every requirement of the Petroleum Industry, whether it be Producing, Transporting, Refining, or Marketing.

Wagner Oil Field Specialists are located at Kansas City, Tulsa, Dallas, Houston, Los Angeles and San Francisco, and will be glad to give you any information you may require.

Wagner Motors in an Oklahoma Refinery.

WAGNER ELECTRIC CORPORATION

6400 Plymouth Avenue, St. Louis, Mo.

Fynn-Weichsel Motor and other Polyphase Motors, Singlephase Motors and Transformers. Official Service Representatives for Lockheed Four-Wheel Hydraulic Brakes.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

FOR SALE—EQUIPMENT

For Sale

BEST GAS ENGINES MADE

Bessemer—All sizes.
Bruce-McBeath—All sizes from 50 to 350 HP.
Miller Improved—All sizes from 50 to 300 HP.
Nash—All sizes from 10 HP to 1,000 HP. New and rebuilt. Rebuilts guaranteed as good as new.
Rathbun-Jones—now Ingersoll-Rand—125 HP and larger.
Also Compressors and a number of other high grade makes of new gas & gasoline engines, all sizes from 1 HP up.
In the heart of the Mid-Continent fields. Quick delivery assured. All equipment installed and satisfaction guaranteed.
Write or wire your order. We are prepared to give, you the kind of co-operation that you would like to get.
OKLAHOMA ENGINE AND COMPRESSOR CO.
8th St. and Santa Fe Tracks
Bartlesville, Okla.

STANDARD RIG FOR SALE

New 120-foot standard rig, complete; has just drilled one well; good 6-inch Marion rig irons; set Marion iron bull wheels; set Lucy calf wheels; 65 H. P. Lucy boiler; new style Ajax engine complete; O. W. S. engine; two 250-bbl. steel tanks; underreamers; elevators, gas burners; belts; casing line; crown block; casing clamps and considerable other drilling equipment; all in first-class condition; practically as good as new and offered at a great discount. Write R. S. Randerson or H. L. Berry, 318 Braniff Building, Oklahoma City, Okla. Telephone Maple 0778.

NATURAL GAS ENGINE

One Allis Chalmers 24-in. x 32-in. 2-cylinder tandem gas engine, direct connected to 500 K. W. generator, 480 V., 600 amps., 3 phase, 60 cycle, 150 R. P. M., alternator with belted exciter.
C. R. MILLER MFG. CO.
623 Santa Fe Bldg.
P. O. Box 87, Dallas, Texas

FOR SALE

Five Deane Triplex pumps, 5x8.
One No. 5, 1 No. 9, 1 No. 11 Sweetland oil filters.
Two 10-inch S. Roturbo centrifugal pumps.
Six 10-inch S centrifugal pumps, steam turbine.
Storage tanks, various sizes. Send for list.
Send us your inquiries for items not listed. We buy your idle equipment.
Wire, phone or write
CONSOLIDATED PRODUCTS CO.,
15 Park Row, New York City.
Barclay 0603.

WIRE ROPE WANTED

Rejected new and used wire lines, ½, ⅝, ⅝, ¾, ⅞ and 1-in., all 6 by 19; state exact condition, number reels each size, approximate lengths of reels, price per gross ton on cars shipping points. Lock Box 57, Easton, Pa.

For Sale
AIR COMPRESSORS
Ludlow; Dunn Garden—Vacuum pump and compressors. Bessemers & Ingersoll-Rand, all best makes, write.
OKLAHOMA ENGINE AND COMPRESSOR CO.
8th St. and Santa Fe Tracks
Bartlesville, Okla.

FOR SALE—Reconditioned Line Pipe, Casing. Oil & Gas Well Supplies always carried in Stock. Inquiries solicited.
LEE MORRISON SUPPLY CO.
Bartlesville, Okla.

FOR SALE—EQUIPMENT

NEW WROUGHT IRON LAP WELDED TUBES SUITABLE FOR REFINERIES, ETC.

We are representing in this country the only tube mill in Germany not yet having joined the European "Combine" and can offer to importers or users very favorable propositions in tubes 12" outside, 5 m/m wall thickness, 37 kilo per meter; 14" outside, 6 m/m wall thickness, 52 kilo per meter; 16" outside, 7 m/m wall thickness, 68 kilo per meter; 18" outside, 8 m/m wall thickness, 90 kilo per meter; 20" outside, 8 m/m wall thickness, 100 kilo per meter. Suitable for water pressure about 25 atmosphere. If necessary can also offer other wall thicknesses. Send us detailed inquiries for quantities needed this year.
GEORGE LEVY COMPANY,
200 Broadway, New York City.

For Sale

OIL ENGINES

We will install them for you. Rebuilt and new. Guaranteed. If not satisfactory we will remove them with no cost to you.
Fairbanks-Morse Type "Y" oil engine in all sizes, new and used from 10 HP to 300 HP.
Bessemer; De La Vergne; Vern-Severin; Worthington; St. Marys Diesel and all standard makes. New and Rebuilt.
Ideal Location for quick shipments. Write or wire at once.
We are prepared to give you the kind of co-operation that you would like to get.
OKLAHOMA ENGINE AND COMPRESSOR CO.
8th St. and Santa Fe Tracks
Bartlesville, Okla.

FOR SALE — Uncrated Worthington Turbine pump, 4,500 gallons per minute, double 10 in. suction, for direct or belt connection, high efficiency, 120 head. $800. Jamot Brown, Florence, Colo.

CASING AND LINE PIPE

We are in the marked for used casing and line pipe. All sizes and any quantity. Let us figure with you.
ELLIOTT MACHINE & SUPPLY CO., INC.
Depew, Okla.

USED LINE PIPE AND CASING FOR SALE

7—25-h.p. used gas engines.
10—6-in. standard rigs.

15,000 ft. 5⅛-in. used casing.
15,000 ft. 6⅝-in. used casing.
10,000 ft. 8¼-in. used casing.
5,000 ft. 10-in. used casing.

75,000 ft. 3-in. used line pipe.
50,000 ft. 4-in. used line pipe.
20,000 ft. 6-in. used line pipe.
For immediate shipment from our Texas yards.
KEYSTONE PIPE & SUPPLY CO.
607 Holmes Bldg.,
Fort Worth, Tex.

EQUIPMENT WANTED

WANTED—To rent with privilege of buying later, one No. 16 Leidecker or a No. 25 Star drilling machine. Charles Kennedy, Route 4, St. Clairsville, Ohio.

WANTED—Used tractor with winch for hailing purposes. Fordson with Wilson winch or Rumley oil-pull tractors preferred. Must be in good condition and worth the money. W. G. Banks, Box 116, Mounds, Okla. Phone 159.

WANTED TO BUY—Carloads or more "Old Steel Oil Refinery Tubes," for exportation, 3½" to 5" outside diameter, preferably 4" to 4½", minimum length 7½ ft., wall thickness ¼" or more, fairly straight, also ready to purchase output oil refineries for this year. Detailed offers stating quantity, time of delivery, description, price, etc. to George Levy Co., 200 Broadway, New York City.

MAILING LISTS

OIL COUNTRY mailing lists; all kinds; guaranteed. Oil Industry Register P. O. Box 3103, Tulsa, Okla.

FOR SALE—PLANTS

FOR SALE—Compounding plant in good location. One of the best equipped plants in Mid-Continent Field. Write for details. Box B-732, The Oil and Gas Journal, Tulsa, Okla.

MANUFACTURING MACHINISTS

MACHINE WORK—Foundry products; let us figure on the manufacture of your equipment. First-class service. Reasonable prices. Prompt deliveries. Large establishment.
GENERAL ENGINEERING & MFG. CO.
St. Louis, Mo.

CRAGO CUT GEARS

Worthy of your confidence. General machine work. 1416 Walnut, Kansas City, Mo. Phone Harrison 7660.

BUSINESS OPPORTUNITY

A REAL STRUCTURE

In Oklahoma, approved and recommended by leading geologists. I own 1,500 acres on this structure and desire to interest responsible people with sufficient capital to drill one well. Am experienced operator and will furnish unquestioned references. Have all necessary drilling equipment. Will sell one-half interest in well and acreage to satisfactory people. This is a real proposition and represents an unusual opportunity to those interested. Address Box B-747, The Oil and Gas Journal, Tulsa, Okla.

FINANCE your project with stock bonded. Quickest and most satisfactory known method of raising capital. Information free. Bankers Interstate Security, Electric Bldg., Denver, Colo.

OIL, MINING or industrial companies who desire to sell block of stock for legitimate development or purchase of property, write us your particulars. Pre-organization financing before incorporating our specialty. Clean methods, moderate commissions. National Business Corp., 301 Foster Bldg., Denver, Colo.

YOU'VE GOT THE MONEY

And I have the acreage and experience. Lets get together. Here's my proposition. I own outright 260 acres on the Angelina-Caldwell Fault in Texas. Can block 5,000 additional acres. I want a partner to help me develop this property. Shallow wells will pay good revenue; deeper sands will pay big. I can handle rotary or cable tools, was superintendent in field for major oil companies. Also in land departments. If you are interested I will be glad to give you complete information. Write Box B-740, The Oil and Gas Journal, Tulsa, Okla.

BANKERS ROYALTY HOLDING CORP.
(Now being organized)
Will consider small royalty dividend paying, individual interests, and other royalties in Mid-Continent or other attractive fields. Want capable Directors, knowing the business in their fields. New plan of financing that will be sure of success. Submit all details in first letter. Suite 621, 50 Broad St., New York.

FOR LEASE OR SALE—100,000 sq. ft. on N. Y. C. R. R. and Maumee River, navigable stream, 1 mile from center of city. Suitable for oil-distributing center on paved street. J. G. Bullinger, Toledo, Ohio.

SPANISH-ENGLISH TRANSLATIONS
We specialize in Spanish-English and English-Spanish translations of correspondence, legal documents, catalogs, etc.
Commercial Translation Service
P. O. Box 1533 Dallas, Texas

MONEY

Provided for development, operation, expansion, mergers or purchase of producing or proven oil or gas properties in Texas, Oklahoma, Arkansas and La.
Facilities for appraisal of properties and preparation of bond issues.
No propositions considered for less than $500,000.
P. O. Box 540, Chicago, Ill.

OIL COMPANY with large settled production and tested acreage wants additional capital to develop holdings. An attractive proposition to parties furnishing money. Box 1629, Tulsa, Okla.

BUSINESS OPPORTUNITY

FOR SALE

Have lease contracts on 4,000 acres Joplin, Picher, Lead & Zinc District. Low Royalty. No Money required except for development. Will assign all or any part on liberal development requirements.
B. M. & S. MINING CO.,
Box 365, Columbus, Kan.

CAPITAL — Experienced dependable broker with following will give personal attention to financing worthwhile proposition. B. W., 810 Broad St., Newark, N. J.

MINNESOTA LAKE SHORE FRONTAGE.

98½ acres on Deer Lake, Itasca County, with three thousand feet of splendid hard sand beach. Pine clad shore line. Lake spring fed with never failing average stage of water. Fish in abundance, Bass, Great Northern Pike, "Muskies." Comparative isolation. Classy golf links nearby. One of the most beautiful properties of its kind in state. Full particulars upon application.
ARROWHEAD LAND COMPANY
606 Torrey Building,
Duluth, Minn.

ORGANIZATION with years of experience is prepared to supply capital for worthy project; commission basis; corporations and mergers formed; prospectuses prepared. Safety Finance Service Co., 11 Broadway, New York.

A PRODUCER of Pa. and Ky. oil (can give good references) desires to sell ⅓ working interest in 1 to 12 tests located near production or on good structure. Cost of tests at less than ½ of $2,000. Will only answer parties with good references. Ernest Porter, East Brady, Pa. or Monticello, Ky.

COAL LAND & COAL LEASES

With coal deposits ranging from three hundred thousand to five hundred million tons. Priced from 1 cent to one-thousandth cent per ton. If you have not at least ten thousand dollars to invest do not reply.
P. O. Box 212, Enid, Okla.

CALLAHAN County block for 2,000-foot test. Good geology. Frank Poorman, 316 Taylor St., Ft. Worth, Texas.

HELP WANTED

WANTED — Superintendent for foreign service in the Near East by thoroughly responsible corporation. Must be experienced in both cable tool and rotary drilling to leave Los Angeles in June. Only first class men need apply. Several tool pushers will also be needed. Box B-752, The Oil and Gas Journal, Tulsa, Okla.

GEOLOGIST WANTED

Experienced geologist to join organization and to become head of land department being organized in company entering Kansas, Oklahoma, Texas and New Mexico. Send references addressed, Suite 812, 150 Broadway, New York City.

AMERICAN ENGINEERS SERVICE, Pittsburgh, Pa. Requires for employment proposals. Graduate Mechanical Engineers; Steam and Chemical maintenance engineers; Designing Draftsmen; Piping; Structures; Power equipment; Chemist; Testers; Accountants; Civil Engineers and Oil Geologist. Free telegraph service to employers, everywhere.

WANTED—Practical man who has a personal acquantance with oil field men in Mid-Continent Field to introduce belt specialties for large manufacturer. Excellent opportunity for man with acquaintance. Box B-746, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Chemical engineer for sales work in Mid-Continent. Experience in natural gasoline field desirable but not essential. Send photograph and complete information. Box B-743, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—DOGS

FOR SALE — Setter puppies. Dam's grandsire imported from Llewellin's kennels. For fall hunting. Registration papers. Pearson, Box 222, Breckenridge, Texas.

FOR SALE—Llewellyn and English setters also rabbit hounds on trial, pamphlets free. O. K. Kennels, Marydel, Md.

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order.

POSITION WANTED

POSITION WANTED

DUBBS PLANT head stillman would like to communicate with new or prospective licensees in regards above position. I am at present employed in this capacity with five years' extensive experience. Box B-751, The Oil and Gas Journal, Tulsa, Okla.

MECHANICAL ENGINEER, graduate with thorough shop training, experienced in oil refinery and gasoline plant design and construction, open for engagement. Now employed. Box B-753, The Oil and Gas Journal, Tulsa, Okla.

FIRST-CLASS production man wants position as lease foreman; 12 years' experience. Can go anywhere; best of references furnished. Box B-750, The Oil and Gas Journal, Tulsa, Okla.

AVAILABLE upon giving suitable notice, desires a change, married, 30 years' experience in office, plant and field. Natural gas distribution, no matter how many consumers. Will make friends of all. Address Box B-723, The Oil and Gas Journal, Tulsa, Okla.

TEN YEARS' experience in most branches of oil-field organization and management, standard and rotary systems. Desirous of communicating with reliable company, prospective to employment. D. R. M., Apartado No. 732, Mexico City, Mexico.

EXPERIENCED OIL MAN wants position with progressive oil company, salary, or salary and interest. Twelve years' experience, Oklahoma, Texas and Louisiana, in production and land divisions. Capable of taking charge branch office, drilling your wells, pumping and taking leases; six years in Central West Texas and Gulf Coast districts. Know both rotary and cable tools. Employed at present, want to make change. Best of references. Answer care Box B-731, The Oil and Gas Journal, Tulsa, Okla.

ELECTRICIAN—Fifteen years' experience installing, operating and maintaining electrical equipment for large power companies and electrical contractors. Wants position as electrical foreman of construction or chief electrician of operation. P. O. Box 1585. El Paso, Tex.

POSITION WANTED — By capable experienced natural gasoline producer. Experienced in every branch from securing gas to selling product—over ten year period. Good executive and financing ability. All replies strictly confidential. Box B-729, The Oil and Gas Journal, Tulsa, Okla.

PRACTICAL Gas Engineer, having ten years experience in natural gas production, desires a position as superintendent. Familiar with geology, appraisal's, drilling, compressing and transporting, also pipe line design and construction. Now employed. Want opportunity with future depending on ability and results. Married Age 33, Box B-745, The Oil and Gas Journal, Tulsa, Okla.

POSITION WANTED by Field Superintendent with 27 years experience with cable and rotary tools. Age 41. Employed at present but desires a change. Box B-742, The Oil and Gas Journal, Tulsa, Okla.

ENGINEER-SURVEYOR, now employed, wishes to make change of firms. Ten years' oil field experience in responsible position with major oil companies. Box B-730, The Oil and Gas Journal, Tulsa, Okla.

OIL ACCOUNTANT, thoroughly experienced all branches field and refinery costs, warehousing and office management. Practical knowledge operating methods. Would consider foreign detail. Correspondence invited. Box B-721, The Oil and Gas Journal, Tulsa, Okla.

CHIEF Production Accountant, co-operating lessee and lessor, desires position. Economical reorganization. Royalty payments, reports, and records that satisfy. Henry O'Connor, 815 Sixth Street, Alexandria, La.

WANTED—Superintendency, capable, reliable man with 19 years' experience in all branches of oil industry. Box 1122, Herring Hotel, Amarillo, Tex.

POSITION WANTED

PETROLEUM GEOLOGIST & Mining Engineer, experienced Rocky Mt. Region and Northern Mexico. Available immediately. Box B-744, The Oil and Gas Journal, Tulsa, Okla.

EXPERT REFINER wants superintendency of small plant, over four years in present position, desires change. I can get maximum percentages with minimum costs. Box B-741, The Oil and Gas Journal, Tulsa, Okla.

CHEMICAL engineer and refinery superintendent with over 22 years' experience in European and American crude oils, specialist in lub oils and high vacuum distillation, desires change. Best references. Box B-736, The Oil and Gas Journal, Tulsa, Okla.

ROYALTIES—PRODUCTION

ROYALTY FOR SALE—I have a few units royalty for sale on the southeast quarter of 24-23-4 in Garfield County, ½ mile west of the big Marland-Garber well. Address L. L. Thorp, Anthony, Kans.

A GOOD CREEK COUNTY BUY.
Owner will sell 20 acres in fee full royalty and unleased. In S. E. ¼ Section 26-15-9 Southeast of Bristow. $75 per acre. H. O. Davis, 106 S. Hudson, Oklahoma City, Okla.

WILL SELL in fee 600 acres Secs. 26 and 27, Twp. 18, R. 25, Eddy County, N. M. $6. acre. F. Simpson, 405 Land Bank Bldg., Kansas City, Mo.

LEASES AND ROYALTIES
Surrounding development
at
Amory, Monroe County, Mississippi.
BROWNING & BORDEN
P. O. Box 222
Amory, Mississippi
The oldest brokers in the field.

ROYALTIES WANTED—Producing-offset and under drilling wells; also producing properties and leases. J. Ben Brown, 115 North Vancouver St., Tulsa.

CASTRO COUNTY, TEXAS

Oil royalties and leases in and adjoining Gulf block now drilling.

J. W. ALLEN
8, Enfield Austin, Texas.

CULBERSON COUNTY, TEXAS—I own 16,000 acres in one body in Culberson County Texas. Will sell mineral rights on entire tract reserving eighth royalty, at $1.50 per acre. C. H. Leavell, Box 1223, El Paso, Tex.

RATLIFF & CO.
Oil leases and royalties. 630 and 631 Security Bldg. Phone W. 7881, Oklahoma City, Okla.

POTTAWATOMIE County Royalties, large or small interests. B. H. Rowlett & Co., Tecumseh, Okla.

FOR SALE—Close in royalty on ¼ Sec. Churchill Field, Kansas. Choice location. Box B-694, The Oil and Gas Journal, Tulsa, Okla.

LEASES—PRODUCTION

OIL LEASES Castro County, Texas. For Sale for cash only subject being unsold.
40 Acres of S.W. Quarter Section 39 Block 10T—$5.00 per acre.
80 Acres of N.W. Quarter Section 184 Block M 6—$3.00 per acre.
80 Acres of N.E. Quarter Section 177 Block M 6—$3.00 per acre.
80 Acres of N.E. Quarter Section 13 Block 10T—$3.00 per acre.
20 Acres of So. portion Section 49 Block K13—$4.00 per acre.
Frank Hassel. Box 822. Plainview, Tex.

DRILLING BLOCK secured on approved acreage and well supervised; no bonus; we keep some acreage as fee. Nicolle, Petroleum Geologists and Operators. Box 1720. Fort Worth, Tex.

LEASES, drilling blocks, royalties, West Texas for sale. Green & Hines, Box 1303, Abilene, Tex.

LEASES—PRODUCTION

WANT COMPANY TO DRILL test well on high class structure covered by our leases. VOE Company, 408 Empire Bldg., Denver, Colo.

IF YOU WANT TO BUY
Oil leases, royalties, acreage in fee, or a drilling contract, anywhere in the Big Bend district of Texas, write or wire.
JOHN CHRISTIE & CO.
Investment Brokers
Alpine, Tex.

AMARILLO PANHANDLE OIL FIELD
Underwriter Brainard Ranch oil and gas leases, 25,000 acres in Hutchinson County. Hutchinson County is the major producing area. New 5-year leases from 20 acres to 160 acres. Bought right, can sell at reasonable price per acre. Write for map and prices. I have handled, as underwriter, over 60,000 acres in the field on which over 80 wells are now drilling or producing. Ed R. Mayer, Amarillo Hotel Bldg., P. O. Box 1186, Amarillo, Tex.

LEASES on structure near drilling test in Edmonson County, Ky. Detailed geological and farm maps. Have drilling contracts in Edmonson and Warren Counties, also northeast Mississippi. M. M. Hobson, Bowling Green, Ky.

FOR SALE—Oil & Gas leases on approved structure, good geology well now drilling in Shelby County, Ill. Priced right. A. L. Ginther, Shellyville, Ill.

FOR SALE—40 acre lease Sec. 21-1N-5W near recent completions by Carter & Magnolia. $30 acre. C. B. Patton, Walters, Okla.

FIRST CLASS thoroughly geologized Structure in Major County, Okla. Can give 4,000 acres on top of structure for drilling test well.
E. A. RITTER
1152 York St., Denver, Colo.

Your Silent Partner

Place your ad in The Oil and Gas Journal. It will work for you 24 hours a day, and 7 days a week.

You can take "time off" for the theatre or ball game, but your ad never stops telling thousands of prosperous oil men and companies about your property, product or service.

Take in a "Silent Partner". Keep him working for you always. Place your ad in the Classified Wants section.

The OIL and GAS JOURNAL

WANTED FOR DRILLING TEST shallow structure of several thousand acres without bonus. Geological report necessary. C. W. Maek, 1308 Broadway, Denver, Colo.

FOR LEASE—Cimarron County, Okla. 6,000 Acres, one block, adjoining Ramsey's lease in Townships 5 and 6 Range Seven. Dr. Owensby, Pittsburgh, Kans.

OWNING oil leases in Turner Valley and other fields in Alberta, on structure, with favorable geologist report, would let drilling contract on royalty basis. Hansen and McEwen, Alexandria Hotel, Calgary, Alberta, Canada.

NEW MEXICO, Lea County, map operations marked, 50 cents. Leases any part of State. Inquiries about development replied to promptly. Wm. U. Tate, Francisan Hotel, Albuquerque, N. Mex.

LEASES—PRODUCTION

FOR SALE—About 2,400 acres, Richland Parish; best land with great oil and gas prospects. Price $20 acre in fee. W. T. Pitts, The Land Man, Indianola, Miss.

OIL OPERATORS NOTICE—Drilling blocks, protection acreage or royalties in Mississippi or Alabama. Correspondence solicited. Mississippi Oil Exchange, Amory, Miss.

I AM interested in purchasing two or three small producing oil leases (from 8 to 20 bbls. of settled production) with additional drilling territory in shallow field in southern Kansas. Also good producing gas lease with additional drilling territory. In reply give all available data regarding property which must be first-class in every respect; will consider no other. Box 292, Chautauqua, Kans.

FOR INFORMATION and leases on the Harney Basin structure near Burns, Ore., write Box 423, Burns, Ore.

OIL LEASES—Drilling blocks, royalties, lands in fee in Callahan and adjoining counties. Clyde Realty Co., Clyde, Texas.

FOR SALE—Leases and production in Warren, Allen and Barren Counties. Have leases in Barren County joining producing leases and some within half-mile to 1 mile of production. W. P. Harley, Bowling Green, Ky.

SOUTHWEST TEXAS — WINKLER, Loving, Reeves, Ward, Pecos, Culberson Counties.
Drilling blocks. Leases. Royalties.
Ranches in fee.
H. F. Anthony, Pecos, Tex.

WRITE for my state of Texas oil map free. Oil leases exclusively. Reference, Mercantile Agencies.
C. W. WEBSTER
W. T. Waggoner Bldg.
Fort Worth, Tex.

"IN THE TREND"
Southeastern New Mexico and west Texas counties—Lea, Eddy, Chaves, Gaines, Andrews, Winkler, Loving, Ward, Culberson and Pecos Counties, oil and gas leases, royalties and drilling blocks. We buy and sell. F. S. Blackmar, P. O. Box 541, Roswell, N. Mex.

SOUTHEAST NEW MEXICO
Can furnish practically proven leases in Artesia Field, Eddy County. Also other tracts in Eddy, Chaves and Lea Counties. Particulars on request.
H. T. ORCUTT
1114 Colcord Bldg., Oklahoma City, Okla.

FOR SALE—Leases and royalties, Seminole and Pottawatomie Counties.
I. H. TOWNSEND,
Phone LD 14, Shawnee, Okla.

HAVE SEVERAL pieces of flush and settled production for sale in Oklahoma and Wichita Falls districts. Prices reasonable and terms can be arranged if necessary. P. O. Box 1144, Dallas, Tex.

WRITE today for bargain list of royalties, leases, drilling deals, production and fee ranches in Okla., Tex., N. Mex. to National Land Co., 508 Burkburnett Bldg., Fort Worth, Tex.

HAVE 163 acres of oil land for lease. Lots 1 and 2 of W ½ SW of NE of Section 2, and W ½ NE SE and NW Se of Sec. 2, Twp. 16, Rg. 12e, Tulsa County Write Jane Burns, Route 2. Lockwood, Mo.

FOR SALE—Selected oil and gas leases adjoining producing and drilling leases in Barren County, Kentucky. Prices right. L. W. Preston, Glasgow, Ky.

HAVE one block 10,000 acres west of Winnsboro in Wood and Hopkins County; all new; commercial leases. Want well and 25 cents or will take a well and offset. Also have other blocks on same terms. Will furnish maps and geology. Box 466, Winnsboro, Tex.

WILL LEASE Eighty acres near Wasson-Carter well, now drilling in Jefferson County. Garibaldi & Cromwell, Ringling, Okla.

WILL lease direct my McClain County, Okla., lands. Box 1, Oklahoma City, Okla.

ADDITIONAL CLASSIFIED WANTS ON PAGE 194

35 CENTS a line first insertion; 25c a line each additional insertion. Cash in advance.

CLASSIFIED WANTS

CREATE AND BUILD BUSINESS

MAIL your advertisement now. It will be published next week. Cash with order

(Continued from Page 193)

LEASES—PRODUCTION

NEW OIL FIELD. Shallow drilling, one well standing full of oil, one well now drilling, several new well locations made. Will sell a few leases at $3. to $5. per acre. P. O. Box 96, Bossier City, La.

FOR SALE—Oil leases in Cimarron, Texas, Beaver and Woods counties. Orbee Lease Co., 1114 Colcord Bldg., Oklahoma City, Okla.

200 ACRES of land in McCurtain County Okla., $5 per acre, oil and mineral rights included, low tax rate, title certificate given with deed. 80 acres in Southeast part of county Red River bottom land $15 per acre. Also 11,000 acres, no oil or mineral lease make me best offer. P. T. Calahan, Idabel, Oklahoma.

FOR SALE
Leases, Metcalfe County, Ky., near production. Also semiwildcat royalties.
A. W. RICHARDS
Center, Kentucky.

BACA COUNTY, Colorado, Oil leases, perfect title, immediate delivery. In the center Marlin Oil Co., and Milligan tracts. Four tests being drilled by Phillips and Sinclair Oil Co., Price $5.00 and up. Booth & Douglas, 322 Chambers Bldg., Kansas City, Mo.

MISSISSIPPI GULF COAST
7,000 acres standard form leases surrounding deep test now down 2,100 feet. Twenty-five cents rentals, Price 50c per acre in block of 100 acres or more. E. M. Barber, Box 673, Gulfport, Miss.

DRILLING blocks bought and sold. Chaffee & Co., 500 Equity Bldg., Oklahoma City, Okla.

WRITE or wire for our list of lands, leases and royalties; see us for drilling propositions. A. L. Bowles & Co., office phone 878, resident phone 1054-J, Ada, Okla.

75,000 ACRES State oil lease, eastern New Mexico. Rental 5 cents; price 50 cents to $1 per acre. Oil leases anywhere in Texas Panhandle. Price from $1.50 to $1,000 per acre. John P. Mathis, National Bank of Commerce Bldg., Amarillo, Tex.

EASTERN NEW MEXICO
10 yr. Oil & Gas Leases, low rental.
Cheap land & Royalties
R. T. Parkin, Box 624, Tucumcari, N. M.

LEASES and royalties for sale. Beaver County. J. H. Crabtree, Beaver Okla.

Send for Maps and Revised List of
TEXAS PANHANDLE

Dallam, Hartley, Moore and Sherman County

Oil Leases Direct From Owner

50c Per Acre and Higher

Brokers' Inquiries Invited
J. W. PIGMAN, Owner, DALHART, TEXAS

WANTED

I AM interested in purchasing two or three producing oil leases, from 10 to 25 bbls. per day of settled production. Will consider only leases in the State of Kansas, preferrably Chautauqua or Montgomery Counties. Write giving full particulars. Must be first-class in every respect. Box 292, Chautauqua, Kans.

WANTED—Leases, royalties, production, drilling blocks or fee lands in Tex., Okla., N. Mex. Write American Oil Co., P. O. Box 487, Fort Worth, Tex.

PRODUCTION WANTED
I am in close touch with a large Syndicate now being formed in New York to take over settled production with undrilled acreage in all the old fields from Pa. to Texas, and sponsored by practical men having wide experience in the Oil Industry. Owners please answer if you are willing to grant very liberal terms. J. E. Black, 321 Bway, New York City.

WANTED—WET GAS CONTRACTS
Gasoline producer will give interest in plant or overriding royalty. Give volume and gasoline content. Wm. H. Allen, contract dept., 1215 Detwiler Bldg., Los Angeles, Calif.

WANT producing royalties if priced right. Richard Hill, 813 E. Haskell, Tulsa.

WANTED

WANTED—Financial help to drill very promising oil structure. Box B-720, The Oil and Gas Journal, Tulsa, Okla.

WANTED—Oil Lease Purchase Association, Inc., 227 U. S. National Bank Bldg., Denver, Colo., buys 40 and 80-acre leases, offsetting or not to exceed one-half mile from drilling well or wells guaranteed to be drilled. Also producing royalties.

HOTELS

TEXAN HOTEL, Pampa, Tex. Heart of Panhandle Oil Field. Family style, home-cooked meals.

ACCOUNTANTS AND AUDITORS

Established 1910
H. V. ROBERTSON & CO.
(H. V. Robertson, C. P. A.)
Accountants and Auditors
Income and Estate Tax Service
705-6-7 Amarillo Bldg.,
Amarillo, Texas.

MONEY RAISING

DO YOU NEED MONEY for organizing or financing oil or mining deals? Write 131 E. 13th. Oklahoma City, Okla.

RAISE CAPITAL
Through sale of securities in your corporation; worthy enterprises only; need not qualify under "blue sky" laws; 25 years experience behind plan; give few details first letter.
NORTHCLIFFE CORP.
25 West Forty-third, New York.

ADDRESSES WANTED

WANTED—The address of Roy Watkins. He worked in the oil field at Desdemonia, Tex., and in south Texas and later at Webb City, Okla. Box B-680, The Oil and Gas Journal, Tulsa, Okla.

INCORPORATIONS

CHARTERS — Deleware best, quickest, cheapest, most liberal. Free forms. Colonial Charter Co., Wilmington, Del.

DELAWARE incorporators. Charters fees small, forms. Charles G. Guyer, 901 Orange St., Wilmington, Del.

OIL INDUSTRY PRINTING

ADVERTISING RATES

	1 Time	2 Times	3 Times	1 Mo.
3 lines	$1.05	$1.80	$2.55	$3.30
4 lines	1.40	2.40	3.40	4.40
5 lines	1.75	3.00	4.25	5.50
6 lines	2.10	3.60	5.10	6.60
7 lines	2.45	4.20	5.95	7.70
8 lines	2.80	4.80	6.80	8.80
9 lines	3.15	5.40	7.65	9.90
10 lines	3.50	6.00	8.50	11.00

(Six words usually make a line.)
Compute white space at the above rates.
Mail your advertisement to
THE OIL AND GAS JOURNAL
Tulsa, Oklahoma.

CONSUMERS' LEDGERS
We are prepared to furnish from stock standard forms of gas meter Consumers' Ledgers. Sample forms and quotations on request. First-class material and workmanship.
DERRICK PUBLISHING CO.
Oil City, Pa.

OIL FIELD LEGAL BLANKS
Leases, assignments, releases, township books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

PATENT ATTORNEYS

PATENT-SENSE — Valuable book (free) for inventors seeking largest deserved profits. References include prominent oil men. Lacey & Lacey, 718 F St., Washington, D. C. Established 1869.

REGISTERED PATENT ATTORNEYS
United States and Canada
Before disclosing your invention to anyone, send for blank form.
Evidence of Conception
Bulletin "How to Establish Your Rights" and complete information free.
LANCASTER & ALLWINE
240 Ouray Bldg., Washington, D. C.

BIG CONSUMPTION CONTINUES IN EAST, HOLDING GASOLINE FIRM

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 543, 30 Church Street, New York City

NEW YORK, Mar. 5.—The gasoline situation on the Atlantic Seaboard continues firm. Any downward trend in the price must be attributed solely to the crude situation, but there is a question in the minds of some marketers whether there is at present any tendency toward lower tank wagon levels. Consumption continues above expectations. February was an unusually good month, from the weather viewpoint, especially the last two weeks and March indications are for an early spring.

The winter season which is now coming to a close would have been considered bad from the viewpoint of gasoline use had it not been for several redeeming features. The weather conditions were largely unfavorable, with snow on the ground a large part of the time, and the roads often covered with ice. There was a noticeable tendency, however, for persons in and about New York City to use taxicabs during this unfavorable weather, and judging by the numbers of cabs on the road in the midst of the snow and ice, the gasoline used must have been well up to the periods in which the weather was more favorable. The taxis did their best business when the weather was bad.

In addition, motor vehicles used in business, including buses and trucks, continued operating about as before, and the general use of these during the winter was greater than in any previous year.

Last, but not least, there were many so-called pleasure cars on the road during the very worst weather, and it was evident that the average car owner is less and less disposed to put his car up during the winter, especially since the closed models now in use afford especial comfort when the weather is bad.

Eliminate Seasonal Trend

These factors have certainly had a signal effect on the gasoline market on the Atlantic Coast this winter, in keeping prices firm and eliminating much of the seasonal trend of consumption.

At present there is no apparent price cutting of serious nature in the principal gasoline consuming centers of the Seaboard. The chief source of danger is the shipping of Mid-Continent gasoline on a large scale, but apparently this danger has been partly eliminated by the reported purchase of a large quantity of gasoline from Mid-Continent refiners by one of the large eastern marketing units. This purchase is also taken to indicate faith in the maintenance of the price structure of gasoline, at or around present levels.

California gasoline is coming in on a large scale, but it can be said that the effect on the price structure in the East is negligible. It is doubtful if this movement can be continued long in view of the reported gain in consumption on the Pacific Coast.

Kerosene Soft

The kerosene market continues weak, no definite improvement whatever being noted over last week. Both domestic and export demand is below normal, while price cutting is rampant in some sections of the East, where the tank wagon market is as low as 10 cents a gallon.

Gas and Fuel Oil

The market for gas oil is firm. Demand is somewhat improved, and stocks are said to be limited.

Diesel oil is firm at $2.40 a barrel. Business is holding up well, but refiners expect much further improvement in the spring, when shipping conditions become more normal.

Bunker fuel oil is firm. Local marketers are drawing almost equally on Mexico, California, Arkansas and Venezuela to supply the current demand. Of these sources, Venezuela is the only one which can be expected to increase production much in the next few months. Most of the heavy output in the southwest consists of high-grade crude. For this reason the outlook for bunker fuel oil prices is strong.

Lubricating Oils

Lubricating oils are improving in demand, but prices remain unchanged. The smoke-stack trade is showing improvement in some lines, but there is a noticeable decrease in plant operations in certain industries as compared with a year ago. The motor demand is proving the best stabilizer in the market at present.

Paraffin Wax

The wax market is improving steadily, although prices are unchanged, due to the current large stocks on hand. With a weak export market, it may be some time before price advances are put into effect.

Petrolatum

Dark green petrolatum is firm at 3 cents a pound in barrels, for carload lots. Other grades are unchanged and dull. Some seasonal improvement in the situation is expected soon.

The Export Market

A prominent oil export authority, who has recently returned from Europe, states that the demand for refined products there is steadily increasing, and that the demand for American oil should show a further gain this year. The whole of Europe, he estimated, increased the use of gasoline in 1926 about 16 per cent over the preceding year. The gain in England ran about 15 per cent, in France about 17 per cent and Italy about the same.

Improvement Notes

Some improvement was noted in the export market during the past week, largely in connection with the bulk demand for gasoline, kerosene and lubricating oil. In addition there was an increase in shipments of both gasoline and kerosene in cases, this being accounted for in part by heavier demands from Brazil, Argentina and Uruguay.

Reports from Europe say that price cutting is believed to be about over, so far as gasoline is concerned. Consumption is increasing this year, and there is said to be considerable empty storage in England, France and Italy to be filled in anticipation of heavier summer consumption.

The export demand for lubricating oils and paraffin wax continues below normal. Shipments of refined wax showed some increase during the past week, but not sufficient to instill any hope of definite improvement as yet.

Shipments for the week ended March 2 includes a consignment of petroleum coke in brick form to Scotland, amounting to 1,452 tons.

The price situation so far as the export market is concerned is somewhat soft. Gasoline in cases at New York declined three-fourths of a cent during the week to 26.65. There were no other important changes.

Petroleum Exports

The following table shows principal exports of petroleum and petroleum products from New York during the last three weeks (all figures in gallons unless otherwise noted):

	Week Ended Mar. 2	Feb. 23	Feb. 16
Gasoline—			
Bulk	4,241,000	1,474,550	957,038
Cases	3,032,440	304,000	753,000
Kerosene—			
Bulk	3,948,000	.....	.....
Cases	2,011,330	315,500	482,000
Lubricating oil—			
Bulk	4,908,000	.....	.....
Barrels	278,950	159,200	928,300
Cases	147,710	24,290	55,500
Lubricating grease—			
Bbls. (lbs.)	382,950	.....	1,709,550
Paraffin wax—			
Bags (lbs.)	1,084,600	83,380	746,680
Bbls. (lbs.)	106,875	.....	.....
Petroleum asphalt—			
Bulk	352,000	.....	.....
Fuel oil—			
Bulk	1,015,000	.....	.....
Petroleum coke—			
Bricks (tons)	1,452	.....	.....

The foregoing figures include shipments of 500 bbls., 1,000 cases, or more.

(Continued on Page 197)

Chicago Expects New Tankwagon Cut

Crude Reductions and Unfavorable Weather Make a Dull Spot Market. Buyers Are Holding Off

By J. B. Waldo

CHICAGO, Mar. 7.—Crude cuts west and east and bad weather reported over much of the territory made a dull spot market Monday. The crude cuts will be followed, it is expected, by a reduction in the tank wagon scale. Heavy rains will not improve the distribution in the country districts. There was very little buying of any product in the spot market and much uncertainty prevailed as to prices but it was generally conceded that the gasoline market was lower by at least a quarter cent than at the close of last week. U. S. Motor gasoline was generally called 7½ cents, although at least two refiners were willing to take business at 7¼ cents and it was offered for resale at 7 cents over the remainder of March. Quotations on 60-62 400 were 8 to 8¼ cents and 64-66 375 were 8¾ to 9 cents.

Kerosene was also offered freely to dealers at 5¾ to 6 cents. These prices are believed to anticipate a decline in tank wagon prices. Local jobbers expect to be able to fill their storage at low costs compared with last year and will be in no haste to give orders unless there is a material drop in prices.

The gas oil and distillate market was quiet on Monday and no business was reported. Prices were nominally unchanged. Fuel oil is not moving as dealers would like to see it. In fact the buying of all products has been reduced to present needs by the uncertainty regarding crude and refinery markets due to the continued price reductions.

An Eventful Week

Last week was truly eventful in the oil industry of this city and the territory of the Standard Oil Co. of Indiana. Some of the trade refer to it as the "spring housecleaning week." Among the events that are called important, were the reduction in the tank wagon price of gasoline, effective over the territory except at such points where the normal price had already been reduced. These were not changed. Another change was the allowing a quantity discount on kerosene of 1 cent a gallon in 50-gallon deliveries. This is planned to be of special benefit to the farmers and is not effective in Chicago.

The other announcement was of an enlargement of the Q. D. A. plan by which the buyer of 15,000 gallons a month or 180,000 gallons during the year is given a discount of 2 cents which, with the quantity discount of 1 cent in 50-gallon deliveries, makes the highest discount on tank wagon deliveries 3 cents a gallon from the tank wagon scale prevailing at point of purchase. The service station customers were given an additional cent a gallon on purchases of 200 gallons a month or 2,400 gallons a year. This discount had been allowed previously on purchases of 600 gallons a month.

These changes will make little difference with the great majority of individual purchasers of gasoline but they are very likely to prove attractive to the large buyers who buy in considerable amounts for resale as in the case of garages and filling stations.

Market Maintained

In spite of all these disturbing factors, and each one of these changes means a lower price for at least a part of the distributors' sales, the refinery markets have been much better maintained than some expected. Right after the reduction in the tank wagon price, there was talk of refinery prices going to lower levels but as a matter of fact there has been little change that could be discovered. The refinery price of U. S. Motor gasoline has been held by the great majority of refiners at from 7½ to 7¾ cents for resale and while jobbers state they can buy, and in some instances have bought, at 7½ cents only a limited quantity has been offered for resale at as low as 7⅜ cents, although this price has been quoted by some refiners for delivery over the balance of the month but not for immediate shipment. Some large distributors probably bought at 7½ cents over most of last week but there were many buyers who paid 7¾ and 8 cents to their regular source of supply.

The head of one of the largest integrated companies in the territory stated last week that the cost of U. S. Motor gasoline on the present cost of crude was between 9½ and 10 cents; nearer the higher than the lower price, he believed. He admitted that that grade of gasoline was being sold out of Group 3 at that time at 7½ cents but said that the only refiner who could possibly name such a price was one with a flush production from large wells who was willing to figure his crude costs at much less than the present posted prices of crude. Such a plan would be merely sacrificing a legitimate profit on production to enable the refining department to make a more favorable showing.

California Situation

Another very prominent oil man who passed through Chicago last week on his way from California to New York said in substance that the California production at present was 350,000 bbls. a day above the requirements of the Coast territory and that part of this crude for which they had no local use was finding a market either as crude or its products in competition with the crude or products of the Mid-Continent area, and this at a time when the Seminole production was flooding the crude market.

In regard to the California situation, he stated that pipe lines 150 miles long were being laid to earthen storage and the storage on abandoned leases was being put in shape to care for crude which was being shipped back to these old leases by pipe line.

The maintenance and improvement of the present market depends, of course, on the industry being able to carry the load until the overproduction is controlled and the demand improves

Supplies of gasoline must be low with many of the users as well as distributors.

At the close of last week the gasoline market was fairly steady at an average range of 7½ to 7¾ cents. The greater part of the sales made were at these figures. Business, while not active in the spot market, was fair and takings on contract were stated to be better than for February at the same time in the month. Many of the leading sources of supply were holding for these prices while others were quoting 8 cents but admitted that sales at this price were few. Shipments reported from refineries were for the most part better than a month ago. The higher gravities were not active, occasional sales of the 60-62 440 and the 64-66 with 390 or 375 endpoint being reported. There is considerable business still being done in the blended products. One large distributor bought, so report said, 30 cars of 60-62 437 at a price stated to be as low as 7 cents but the distributor himself says that he bought at 7½ cents and while he had several offers at that price none was at less. Some sellers stated that they lost business for U. S. Motor gasoline at 7¼ cents but not one of a considerable number of refiners and marketers knew of any source of supply at any such price. One large and active marketer said that his trade seemed to think that they should buy at 7½ cents but that he had not been able to buy any quantity at a price which would permit him to sell at that price. The lower prices for natural gasoline have increased the demand a little here, at least some business is reported by those who handle this product.

Kerosene Holding Well

Kerosene is holding fairly well, although there were some offerings at slightly lower prices toward the close of last week. The market here was steady at a very general quotation of 6 cents for the 41-43 gravity and 6½ cents for the 42-44 grade. There has been a little stocking up by some large distrbutors while others are waiting and the smaller dealers are not putting in many orders even for single cars. Many of the country dealers are receiving supplies on their contracts and have sufficient for any immediate demand. The real rush from those who buy as they need the oil will come a little later if it comes at all when the spring plowing begins.

Reports from the makers of tractors are that there are many more tractors owned in the country than ever before and it is believed that the farmers will use them freely this year. The recent quantity discount of 1 cent a gallon on 50-gallon dumps, it has been stated, should be of benefit to the farmer.

Gas Oil a Problem

Gas oil is something of a problem right now. One seller who has had quite a large business during the winter said in response to an inquiry that nobody wanted any zero gas oil now. It is rather hard for any one outside of this city and its immediate vicinity to realize that this city has had pretty nearly Florida weather most of the winter. We have had a few brief spells for cold weather but very few and usually for one day only. During February the weather man reports that we had more sunshine than for the entire summer last year and the highest average temperature for 12 years. January was nearly as good, better by comparison so that the fuel oil men have had a bad season and are left with large supplies that they are trying to work off. The oil burner men are reported to be in the dumps. One fuel oil distributor from a neighboring city of several hundred thousand inhabitants and which boasts of its great prosperity, stated last week while in the city, that seven oil burner agencies had closed up their offices since the first of the year.

Distillates

Distillates and gas oils have dragged so far as the stock used for domestic oil burners is concerned and the prices are lower all the way round. It is not a great reduction as yet but shows that the oils are slipping in price. The demand for the industrial gas oils is uneven. There have been several utility companies in the market buying for their needs but no large contracts were reported to have been closed, although one for a considerable quantity was stated to have been given to an out of town refiner. It has been easier to buy the dark refinery run oil and some offers have been received at 3¾ cents by marketers who have been quoting from 4 to 4¼ cents but are now asking as low as 3⅞ cents in some cases. One refiner stated that he was offering his gas oil at 4¼ cents to the dealer or large user either low or high cold test made no difference to him. The buying that is now going on is mostly for late March or April delivery. Northern parts of the country will use some heating oils for a few weeks but this consumption is well cared for by supplies on hand.

Fuel Oil in Rut

The fuel oil market so far as this city is concerned is in a decided rut. The majority of the buyers are holding back on their orders and striving for lower prices. Much of this policy is based on the idea that with such large supplies of crude and with cheaper crude which these buyers see as inevitable, there will be larger supplies of fuel oil. They claim that there will be more of the refineries operated that have no cracking plants and 50 per cent of whose product is fuel oil.

The present consumption of fuel oil by the large industries and the railroads and steamship lines is heavy. There has been some decrease in the supply of Mexican fuel oil which has been replaced by fuel oil from California and other sources with the result that stocks of fuel oil are being decreased the country over. The great increase in the output of crude has obliged some refiners to use more of their tankage for the storage of fresh crude and they have in several cases offered the contents of some of the fuel oil tanks to obtain additional crude storage. In these cases the offerings have been temporary and as soon as the tank or tanks were emptied the refiner has withdrawn any special prices that he might have made while more willing to sell to secure needed storage.

Little Change in Prices

There has been little change in the price situation. In fact several of the concerns specializing in fuel oils state that they have not changed a figure in the quotations the past week. Others have seen a slight weakening of the higher gravities and especially the zero oils believing that the weather from now on will not make the zero oils much more desirable than the regular run of the plant. In one or two cases the refiners have stated that they were not charging an extra price for zero cold test oils but the quantity of the latter was comparatively small. The average quotation for refinery fuel oil, 24-26 gravity, is still $1.25 to $1.30 per barrel but this grade is not produced in as great quantities as it was before the quite general adoption of the cracking stills. The tendency of refiners is to constantly lower the gravity of their fuel oil and users are gradually if slowly adapting their equipment to the use of these heavier oils with a gravity ranging from 20 degrees downward to in some cases as low as 10 degrees.

Lubs Are Active

Lubricating oils are fairly active, although many of the large compounders have placed their orders and are at work on their blends. Some refiners are delivering spring stocks to their distributors and to their customers with an April date. This prevents the rush that would otherwise take place. Stocks of neutrals are light and largely in a few hands but some price cutting is reported more especially by southwestern producers of these oils. Bright stocks are also in not overly large supply but there is some uncertainty as to prices. Several local sales offices report that they are sold up and any further orders must be approved by the main office at the refinery. The industrial demand is steady and fairly large, although factories are not as a rule, operating at their capacity.

Tank Wagon Situation

The tank wagon price situation is expected to hold for some time, although it is recognized that the spread is still wide. Locally there is still a great deal of price cutting, some open and some sub rosa.

Eliminating Odor at Refineries

Richfield Oil Co. Perfects Method Which Solves This Problem and Also Produces Phenols and Cresols

As a public service, the Richfield Oil Co., at its Rioco refinery near Hynes, Calif., recently undertook to eliminate offensive odors incident to its "cracking" operations. By an interesting process, which in many respects is believed to be new, the gases responsible for the smells, in turn, have been "cracked" and dissipated in odorless forms.

The new process, incidentally, produces soft water which now is used in the refinery's cooling towers and thus effecting a substantial operating economy.

Then again, certain cresols and phenols are unexpected derivatives of the new "cracking process." Their extraction seems none the less interesting because their commercial value is as yet undetermined. As products of coal tar both are said to find attractive markets in the East.

The Rioco refinery has a throughput of about 30,000 bbls. of crude oil daily, 4,000 of which is "cracked." Caustic wash waters, flowing off after treatment in course of the cracking, caused the worst of smells. The surrounding country lacked sewers; drainage was into a marsh, and the smells went upon the winds to Long Beach. That city protested and the Richfield company, among other refiners in the neighborhood, promptly undertook to solve the problem. Richfield's marine terminal is at the Long Beach Harbor. The company takes a community interest in the city's affairs.

That there would any result other than the elimination of the fumes—if that were accomplished—was not foreseen. Plans then pending and now nearing completion involved the expansion of cracking operations to a capacity of from 10,000 to 12,000 bbls. of oil a day. Unless the smells could be controlled they would be intensified in the ratio of the increased output of cracked gasoline. The objective was a remedy for the odorous nuisance. A heavy expense was assumed.

Method Employed

The work was done under the direction of David E. Day, refinery engineer of the company; R. A. Panero, superintendent of the Rioco refinery, and Chief Chemist L. G. Lloyd and Assistant Chemist John H. Loomis. Credit for the method devised belongs to Mr. Loomis. Patents have been applied for.

At one time there were three types of disagreeable odors to contend with. All were incident to cracking and were, first, the vapors from the raw cracked distillates; second, odors from acid sludges produced in treating, and, third, the smell from the caustic wash waters.

The two first-named vapors were easily disposed of. They were confiend in an elaborate vapor recovery system by which all tanks were made gas tight. The gases thus imprisoned pass through an absorption plant where the gasoline content is recovered. The remaining dry gas is then burned under the boilers. Similarly, the acid sludge is collected and burned.

The third problem was much more complex. Mr. Loomis is a research chemist and the story of his discoveries is interesting.

Cause of Odors

"I found," he says, "that these odors were caused by chemical soaps formed in the caustic wash waters of the cracked distillates. They consisted of complex phenols and caustic soda. They could have been separated by acids but this would have been costly and no less odorous. A more economical and efficient method had to be devised.

"It was discovered that carbon dioxide would readily break up the soaps almost quantitatively. From that fact the novel solution was obtained.

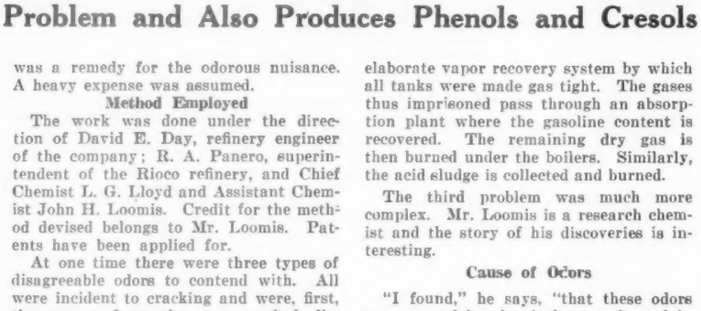
"The system as now installed consists of a 150-bbl. storage tank, a small filter press, a 150-bbl. treating tank, a compressor and suitable gas lines and water lines.

"The spent lye is washed from the agitator to the storage tank and then pumped through the filter press to remove lead sulphides. From the filter press it goes to the treatment tank which is a cone-bottomed tank fitted with a set of perforated coils for flowing. The coils are connected by 6-inch line with the compressor which is installed in the boiler house and which draws flue gases from three boiler stacks and delivers it to the deodorizer at about 3 pounds pressure.

"Steam is also passed into the tank through an injection which provides rapid circulation and heating of the solution. The excess gases and steam are carried off through a 6-inch line to the bottom of one of the refinery stacks, thus disposing of all possible odors.

"During the course of the reaction, all the sodium hydroxide is converted into sodium carbonate which is utilized to soften the water used in the cooling systems of the refinery. This is a valuable saving as we formerly had to use from 5 to 100 pounds of fresh sodium hydroxide a week to keep this water soft.

"The process can be readily looked after by the shift men in charge of the treating plant as the reaction is finished by the time the hydroxide is all converted to the carbonate. This point is ascertained by precipitating the carbonate from a small sample of the solution with barium



Tanks and filter installed at the Hynes, Calif., refinery of the Richfield Oil Co. Caustic waters stored in the smaller tank pass through the filter where lead sulphide is removed. In the larger tank, after being heated, flue gases are blown through the water, cleansing them

FIVE YEARS OF GROWTH IN PETROLEUM REFINING (Continued)

(Continued from Page 90)

GAS AND FUEL OILS (thousands of barrels)

	Domestic Production	Increase Over Previous Year	Imports	Increase Over Previous Year	Domestic Consumption	Increase Over Previous Year	Exports	Increase Over Previous Year	Total Supply Domestic Production Plus Imports	Total Demand Domestic Consumption Plus Exports	Increase Supply Over Demand	Stocks End of Year
1926	365,195	204	14,430	2,185	‡.....	.....	38,351	2,263	379,293	‡.....	.....	†24,898
1925	364,991	44,515	12,245	*682	‡.....	.....	36,088	1,796	377,236	‡.....	.....	†24,681
1924	320,476	32,995	12,927	641	.....	.....	34,292	5,040	333,403	.....	.....	39,774
1923	287,481	32,571	12,286	.....	.....	.....	29,252	12,652	299,767	.....	.....	36,072
1922	254,910	.....	.....	.....	.....	.....	16,600	.....	.....	.....	.....	31,065

*Decrease. †East of California only. ‡Not available on comparable basis.

LUBRICATING OILS (thousands of barrels)

1926	32,293	1,238	33	*4	22,565	1,984	9,438	*240	32,326	32,003	323	7,576
1925	31,055	3,557	37	26	20,581	2,457	9,678	647	31,092	30,259	833	7,253
1924	27,498	1,370	11	*18	18,124	864	9,031	735	27,509	27,155	354	6,420
1923	26,128	2,924	29	*14	17,260	1,732	8,296	406	26,157	25,556	601	6,138
1922	23,304	.....	43	.....	15,528	.....	7,890	.....	23,347	23,418	71	5,613

*Decrease.

WAX (thousands of pounds)

1926	645,790	53,585	10,005	*4,605	252,336	6,474	334,519	251	655,795	586,855	68,940	185,331
1925	590,577	74,000	14,588	1,721	244,301	22,711	334,179	*48,641	605,165	578,480	26,685	116,391
1924	516,577	49,930	12,867	24	221,590	31,760	382,820	53,027	529,444	604,410	*74,966	89,706
1923	466,647	4,644	12,843	5,396	189,830	2,209	329,793	45,292	479,490	519,623	*40,133	164,758
1922	462,003	.....	7,447	.....	187,621	.....	284,501	.....	469,450	472,122	*2,672	204,891

*Decrease.

	PETROLEUM COKE (tons)						PETROLEUM ASPHALT (tons)					
	Production	Increase Over Previous Year	Total Demand	Increase Over Previous Year	Stocks	Increase Over Previous Year	Production	Increase Over Previous Year	Total Demand	Increase Over Previous Year	Stocks	Increase Over Previous Year
1926	995,308	4,308	943,208	92,700	290,500	52,100	2,922,788	*36,500	2,888,888	*8,300	193,300	33,900
1925	991,000	229,900	850,400	160,800	238,400	140,600	2,677,400	131,800	2,615,300	48,900	159,400	62,100
1924	761,100	88,600	689,600	7,700	97,800	71,500	2,545,600	218,500	2,566,400	237,800	97,300	*20,800
1923	672,500	*34,600	681,900	177,700	26,300	*9,400	2,327,100	431,800	2,328,600	428,400	118,100	*1,500
1922	707,100	.....	704,200	.....	35,700	.....	1,895,300	.....	1,900,200	.....	119,600	.....

*Decrease.

Note—All data based on Bureau of Mines reports.

chloride and then testing with phenol phthalein. When the characteristic pink color with alkalies fails to show, the compressor is shut down and the solution allowed to settle. After an hour's settling the sodium carbonate solution is drawn off to the cooling pond and the recovered oils are drawn off to storage.

"These oils will amount to as much as 15 per cent by volume of the sodium hydroxide solution used in washing the cracked distillates and have a specific gravity of approximately 1.02 to 1.04 with about 50 per cent distilling over between 410 and 430 degrees Fahrenheit, the remainder breaking down above 445 degrees Fahrenheit."

Operations since about the first of February demonstrate that the odors are under control, so that the results are threefold. First, the smells are overcome; second, the wash waters are softened and used—an economy; and, third, the phenols and some cresols are produced. These latter, it is true, are blown off with steam in one of the stacks; but, as products heretofore of coal tar, there are numbers of specialties in which both are essential.

LARGE CONSUMPTION IN EAST CONTINUES

(Continued from Page 194)

Estimated receipts of crude and refined oil at Atlantic Coast ports for the week ended March 2 were 3,481,000 bbls., a daily average of 498,000 bbls., as compared with a total of 3,746,000 bbls., or a daily average of 535,000, for the week ended February 23.

There was a marked decline in receipts from the Gulf Coast, which averaged only 269,000 bbls. a day, against 412,000 bbls. a day the preceding week. Receipts from California, on the other hand, increased in the week ended March 2 to a daily average of 117,000 bbls., compared with only 40,000 bbls. the week before.

Imports for the week ended March 2 averaged 112,000 bbls., of which 39,000 bbls. daily came from Mexico and 73,000 bbls. from South America, including Venezuela, Colombia and Peru.

Petroleum Receipts

The following table shows estimated daily average receipts of crude and refined oil by water at Atlantic Coast ports for the last three weeks; also monthly record for the last 12 months (figures in barrels):

	Week ended		
	Mch. 2	Feb. 23	Feb. 16
Gulf Coast	269,000	412,000	452,000
Pacific Coast	117,000	40,000	68,000
Mexico	39,000	59,000	41,000
South America	73,000	24,000	82,000
Total	498,000	535,000	643,000

	Daily Averages by Months				
1927	Gulf	Pacific	Mex.	S. Am.	Total
Feb.	379,000	89,000	40,000	48,000	556,000
Jan.	362,000	73,000	49,000	61,000	545,000
1926—					
Dec.	363,000	57,000	49,000	61,000	530,000
Nov.	335,000	62,000	56,000	40,000	493,000
Oct.	270,000	71,000	61,000	43,000	445,000
Sept.	299,000	98,000	63,000	58,000	518,000
Aug.	320,000	61,000	71,000	46,000	498,000
July	360,000	66,000	115,000	36,000	577,000
June	396,000	104,000	117,000	18,000	635,000
May	318,000	66,000	114,000	25,000	523,000
April	326,000	92,000	126,000	20,000	564,000
Mar.	317,000	97,000	152,000	26,000	592,000

The foregoing figures are based on the carrying capacity of incoming oil-laden tankers.

REPORT OF COMMITTEE OF W. P. R. MEETING

(Continued from Page 42)

the open market to some agency, and that each day this agency, without divulging the identity of reporting companies, compile a composite report of the exact number of cars sold at various and specifically stated prices and the weighted average price determined by these sales. As information of this character would not divulge details with respect to prices of individual companies it could probably be secured and if these reports were carefully restricted to actual grades, to actual spot sales by refining companies, and included only cars for resale in less than carload lots, these prices would be more confidently accepted as an index of the open market than the information now available.

However, no matter what method of appraising the market on closed transactions may prevail, the prices of yesterday should exert no undue influence on the prices of today, and refiners in accepting a weighted average price, just as in accepting a range of prices, should not lose sight of the fact that service, quality and salesmanship command a premium. Some companies will therefore sell above and some below the average and this feature should be carefully considered, no matter to what extent the price of closed transactions is allowed to influence the market of the present.

CALIFORNIA RECEIPTS AND PETROLEUM IMPORTS

Imports of crude and refined oils at the principal United States ports for the week ended February 26, totaled 1,265,000 bbls., a daily average of 180,714 bbls., compared with 1,141,000 bbls., a daily average of 163,000 bbls. for the week ended February 19, and a daily average of 192,214 bbls. for the four weeks ended February 26.

	Week end. Feb. 26
At Atlantic Coast Ports—	
Baltimore	.....
Boston	70,000
New York	778,000
Philadelphia	.....
Others	159,000
Total	1,007,000
Daily average	143,857
At Gulf Coast Ports—	
Galveston dist.	18,000
New Orleans and Baton Rouge	221,000
Port Arthur and Sabine dist.	.....
Tampa	19,000
Total	258,000
Daily average	36,857
At All United States Ports—	
Total	1,265,000
Daily average	180,714
Daily average 4 weeks ended	192,214

Receipts of California crude and refined oils at Atlantic and Gulf Coast ports for the week ended February 26, totaled 350,000 bbls., a daily average of 50,000 bbls., against 318,000 bbls., a daily average of 45,429 bbls. for the week ended February 19, and a daily average of 94,893 bbls. for the four weeks ended February 26.

	Week end. Feb. 26
At Atlantic Coast Ports—	
Baltimore	140,000
Boston	.....
New York	210,000
Philadelphia	.....
Others	.....
Total	350,000
Daily average	50,000
At Gulf Coast Ports	.....
Total Atlantic, Gulf Coast Ports	350,000
Daily average	50,000
Daily average 4 weeks ended	94,893

Distribution of total California oil receipts is as follows:

Crude	185,000
Gasoline	70,000
Gas oil	95,000
Fuel oil	.....
Total	350,000

CANADIAN FIELDS

(Continued from Page 190)

folds of the Rocky Mountain foothills, somewhat similar to the Turner Valley Field but probably less sharp.

GASOLINE IS LOWER IN PENNSYLVANIA MARKET

OIL CITY, Pa., Mar. 5.—The refined market in the Pennsylvania area is pretty well upset as the result of crude reductions, tank wagon cuts and the general crude oil situation.

Gasoline is slightly lower in price and the buying of motor fuels is very slow at the present time. Buying is confined to actual needs and as the weather is not suitable for pleasure motoring these needs are not large by any means. The kerosene situation is about the same as it was last week, the tank wagon cut affecting it some, however. It is near the season of big demand and within a few weeks this product is expected to become decidedly stronger. Fuel oil is holding up well. Wax is cheap and soft without much demand. Neutrals continue very strong although some of the jobbers report that they are not quite so scarce as they have been and that some of the refiners are getting caught up in relation to them. Cylinder stocks are slow and not in much demand with prices a little lower. Bright stocks are in a better position than a week ago.

PETROLEUM STATISTICS, JANUARY, 1927

By G. R. Hopkins

The production of crude petroleum in the United States in January, 1927, as compiled from pipe line runs, amounted to 71,688,000 bbls., a daily average of 2,313,000 bbls. This represents a slight decrease from the previous month, the first time since a year ago that this condition has occurred. Later events have shown, however, that this decrease was only temporary and that daily production in February, 1927, was higher than ever before.

The Mid-Continent district was the only one to show a material gain in production in January. The Rocky Mountain area also increased its production after the slump of the previous month. The major points of interest regarding the various producing fields or states were as follows: Notable increases in production in the Seminole Field of Oklahoma and in the Kevin-Sunburst and Salt Creek Fields of Montana and Wyoming, respectively; marked declines in most of the eastern fields, in New Mexico, and Coastal Texas.

Imports of crude petroleum amounted to 4,514,000 bbls., which is a decrease from December. Receipts of Mexican oil continued to decrease.

Stocks of crude petroleum east of California continued the upward trend which began in December, though the increase was somewhat less than was expected, considering the high production. These stocks on January 31, 1927, amounted to 278,685,000 bbls. as compared with 278,077,000 bbls. on hand the previous month and 291,400,000 bbls. on hand the previous year. Stocks of both light and heavy crude in California showed slight increases over the previous month.

Refined Products

Runs to stills of crude petroleum showed no indication of declining, despite decreased consumption of gasoline, and for January, 1927, amounted to 69,948,000 bbls., a daily average of 2,256,000 bbls. This represents a slight increase over December operations.

The importance of increased yield of gasoline was again in evidence in January, when, with a small increase in crude runs, gasoline production considerably surpassed that for December, the previous high figure. The January output—27,960,000 bbls.—represents a daily average of 901,900 bbls. and an increase over January, 1926, of 20 per cent. Domestic demand for gasoline was 17,888,000 bbls., or a daily average of 577,000 bbls. This represents a 17 per cent decline for December demand, and is only slightly above the demand of a year ago. This abnormal drop in domestic demand was perhaps the most important feature of the month. Gasoline stocks on hand January 31, 1927, amounted to 46,058,000 bbls., an increase over the previous month of a little more than 7,000,000 bbls. At no time in the past have these stocks shown such a marked increase, the chief cause of which was the decline in domestic demand as noted above. These stocks represent 67 days' supply as compared with 49 days' supply on hand the previous month and 62 days' supply on hand January 31, 1926.

The refinery figures of this report were compiled from schedules of 321 refineries, with an aggregate daily crude oil capacity of 2,842,000 bbls. These refineries operated during January at 79 per cent of their recorded capacity as compared with 80 per cent in December.

MARCH CRUDE RUNS SAME AS FEBRUARY

(Continued from Page 38)

White Eagle Oil & Refining Co., Fort Worth	3,000	2,000	2,500
Wilson Brothers Refining Co., Wichita Falls	2,500	1,600	Shut down
Total	174,900	94,975	92,075

*Operated by Magnolia Petroleum Co.

REFINERY OPERATIONS IN KANSAS

(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs March 1	Runs February 1
Arkansas City Refining Co., Arkansas City	8,000	Shut down	3,200
Barnsdall Refineries, Inc., Wichita	5,000	Shut down	2,700
Derby Oil Co., Wichita	5,000	3,500	2,500
Derby Oil Co., Russell	2,500	Shut down	Shut down
Eldorado Refining Co., Eldorado	3,500	2,000	2,000
Golden Rule Refining Co., Wichita	1,000	750	800
Kanotex Refining Co., Arkansas City	10,000	5,000	5,400
Manhattan Oil Co., Kansas City	7,000	3,500	4,000
Miller Petroleum Co., Humboldt	2,000	Shut down	Shut down
National Refining Co., Coffeyville	6,000	6,300	6,000
Peerless Oil Refining Co., Chanute	2,500	2,200	2,000
Roxana Petroleum Corp., Arkansas City	19,500	18,000	18,000
Sinclair Refining Co., Coffeyville	6,500	6,800	6,500
Sinclair Refining Co., Argentine	8,000	6,700	6,000
Skelly Oil Co., Eldorado	14,000	11,500	10,600
Standard Oil Co. of Kansas, Neodesha	12,000	8,000	9,000
Vickers Petroleum Co., Potwin	3,000	1,700	2,200
White Eagle Oil & Refining Co., Augusta	6,500	5,500	5,500
West Missouri Group—			
Alliance Rubber Co., Centropolis	2,000	Shut down	800
Wilhoit Refining Co., Joplin	1,500	800	1,000
Total	125,500	82,250	88,200

REFINERY OPERATIONS IN NORTH LOUISIANA

(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs March 1	Runs February 1
Crystal Oil Ref. Corp., Shreveport	10,500	9,000	10,000
Great Southern Refining Co., Ardis	2,000	Shut down	Shut down
Louisiana Oil Refining Corp., Shreveport, Bossier	25,000	20,300	20,500
Shreveport Producing & Refining Co., Shreveport	5,500	5,000	5,400
*The Texas Company, Shreveport	7,000	6,250	5,500
Total	50,000	40,550	41,400

*Topping.

REFINING OPERATIONS IN ARKANSAS

(Plants which have been in operation during the past year.)

Name and Location—	Daily Capacity	Runs March 1	Runs February 1
Cross Refining Co., Smackover	4,000	3,800	3,500
Home Refining Co., Camden	500	Shut down	Shut down
Home Oil & Refining Co., Hot Springs	500	Shut down	Shut down
Houston Oil Co., Camden	5,000	2,400	2,100
Kettle Creek Refining Co., Pearson	5,000	4,000	3,800
Lion Oil & Refining Co., El Dorado	12,000	6,400	7,000
Newark Refining Co., El Dorado	1,500	1,300	700
Ouachita Valley Refining Co., El Dorado	1,500	800	800
Root Refineries, El Dorado	3,000	2,100	2,150
E. M. Tulle, El Dorado	1,000	Shut down	Shut down
Total	34,000	20,800	20,050
Name and Location—	Capacity Daily	March 1 Runs	February 1 Runs

REFINING AND MARKETING

NEW SECRETARY AND TREASURER, INDIANA CO.

Changes made in the executive staff of the Standard Oil Co. of Indiana last week brought promotions to two men

F. T. Graham
Secretary and Assistant Treasurer.

who had previously not been officers of the company. F. T. Graham was elected secretary succeeding E. G. Seubert who became president, and C. J. Barkdull was elected treasurer, a position which Mr. Seubert also formerly held.

Mr. Graham was born at Plano, Ill., in November, 1886, and began work with the company as a stenographer when

C. J. Barkdull
Treasurer and Assistant Secretary.

only 20 years old. From December, 1911, to March, 1922, he was secretary to Mr. Seubert. He has been assistant secretary of the Standard Oil Co. of Indiana since 1922, and assistant treasurer since 1923. He still holds the latter position.

Mr. Barkdull has been with the company more than 16 years, starting as a clerk in the manufacturing department—building division of the general office in Chicago. He worked in various sub departments of the manufacturing department until August, 1921, when he became general auditor of the Midwest Refining Co. (a subsidiary) at Denver, Colo.

On January 1, 1924, he was made general auditor of the Standard Oil Co. of Indiana, which position he has held since. Mr. Barkdull was born in Chicago.

INCREASE GASOLINE TAX IN TWO STATES

Two more states have been added to the list of those whose gasoline tax has been increased since the first of the year. Effective March 1 the tax in Idaho was increased from 3 to 4 cents. On the same date the tax was increased in Wyoming from 2½ to 3 cents.

Since the first of the year the Alabama tax was increased from 2 to 4 cents effective January 5. Montana's tax was increased from 2 to 3 cents, effective January 1.

Bills providing for increases are pending in the legislatures of approximately half of the states.

CANADIAN MARKETING CONSOLIDATION GROWS

CHATHAM, Ontario, Mar. 5.—The Supertest Petroleum Corp., Ltd., held its annual meeting recently at London, Ontario, when the following officers were elected for 1927: J. Gordon Thompson, president; James D. Good, vice president; W. L. Baragar, general manager; and J. B. Hay, R. H. Dowler, W. H. McPhillips, T. H. Yull, C. F. Marley, A. B. D. Bruce, R. L. Anderson, J. A. McCance, A. H. Fitzsimmons and N. J. Davies, directors.

The report of President J. Gordon Thompson showed that the company completed in April the consolidation of a number of marketing and distributing enterprises. The company controls approximately 200 service stations and contract accounts in Ontario and Quebec, with bulk storage plants at 11 points. It has recently taken over the Ensign Oil Co. of Montreal. Sales for the year increased 50 per cent, and net profits approximated $80,000. In addition to preferred dividends, the company in 1926 paid an initial dividend of 50 cents a share on the common stock.

LONDON OIL EXHIBITION POSTPONED INDEFINITELY

The International Oil Exhibition which was to have been held at the Crystal Palace, London, England, May 4 to 21, has been indefinitely postponed, according to an announcement by Henry James Buckland, general manager. The exhibition was to have been held under patronage of the Institution of Petroleum Technologists.

In a statement relative to the postponement, Mr. Buckland said in part:

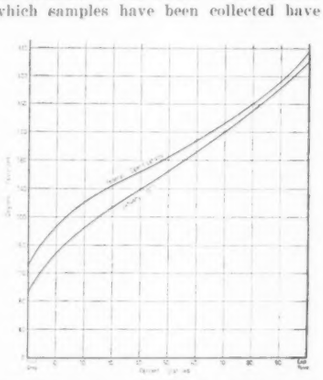
The reservations to date would have ensured quite an interesting show, but I know you will thoroughly agree with my intention not to proceed without definite evidence that every branch of the industry would be illustrated in all its aspects and without the certainty that the exhibition would be a credit to the Crystal Palace and worthy of the nation to which it belongs. Steps will be taken in due course to ascertain the feeling throughout the industry relative to the dates in a future year when the exhibition can be successfully held, and I trust it will then meet with general co-operation, so that the result of our combined activities may be a stimulus to trade and a source of satisfaction to all concerned.

GOVERNMENT FINDS LITTLE CHANGE IN SUMMER AND WINTER GASOLINES

By E. C. Lane and Peter Grandone

The motor gasoline that is being marketed in the United States this winter is practically the same as that sold a year ago. In fact, there has been little change in this commodity during the year, as the gasoline sold last summer was almost as volatile as that marketed last winter.

During the past eight years the Bureau of Mines has made semiannual surveys of the gasoline marketed in the United States, the survey just completed being the fifteenth in the series. The cities in which samples have been collected have



been chosen as representative of the more important marketing territories as it is obviously impracticable to obtain a sample of every gasoline sold in the entire country.

A summary of the results of the 15 surveys is given in Tables 1 and 2, the "winter" surveys being shown in Table 1 and the "summer" surveys in Table 2. Average figures for each city in which gasoline samples were collected are shown in Table 3. A study of these tables, as well as of the individual analysis, shows a general tendency toward the marketing of a standardized product.

Usually there has been a distinct difference between "winter" and "summer" gasoline, that marketed during the winter being more volatile than that sold during the summer. This winter the difference between "winter" and "summer" gasoline is shown only in the lower end of the distillation range.

A distillation curve representing the present Federal specification for U. S. Motor gasoline and the average of all samples in the present survey was prepared.

The samples were tested in accordance with methods given in Bureau of Mines Technical Paper 323-A, and in the case of samples from Laramie, Wyo., and Denver, Colo., the resulting figures were corrected for altitude. All temperatures are shown in degrees Fahrenheit.

NOT WORRYING ABOUT FRENCH GASOLINE LAW

NEW YORK, Mar. 5.—American export companies with headquarters in this city do not seem to be worried regarding the Margaine law in France—effective April 1—which in effect provides for an oil monopoly by placing in the hands of the government the sole right to import gasoline and all other products.

The general attitude taken by the exporters here is that no action will be taken at this time by the French Government to enforce the law. It is pointed out that the government does not have the equipment or the organizations to take over the handling of imports. For that reason it is believed that the Poincare Government will make no attempt to enforce the law.

If the law is to be enforced it will be necessary for the government to buy the bulk stations and other equipment of the foreign companies which have been operating in France for years. This would require a large expenditure and the necessary funds are not available at this time.

However, as long as the law remains on the statute books it is potentially a weapon for the French Government, should it ever desire to obtain complete control of the sale of petroleum products in France. This fact was recognized before the law was passed. Some protests were made at that time by individual companies and the matter was brought to the attention of the State Department at Washington. So far as known the latter took no action in the matter.

TABLE 1—Average Results of Motor Gasoline Surveys
WINTER

Survey—	Specific Gravity	A.P.I. Degrees	First Drop	Per Cent 20	Per Cent 50	Per Cent 90	End Point	Aver. B.P.	Pct. Recvd.
January 1920	0.748	57.7	119	200	259	369	427	264	96.6
January 1921	0.744	58.7	113	197	261	377	431	264	95.9
January 1922	0.745	58.4	102	200	267	377	430	268	96.0
January 1923	0.744	58.8	107	201	267	375	427	268	96.0
January 1924	0.748	57.7	96	196	267	383	431	268	96.2
January 1925	0.746	58.2	95	195	266	382	425	267	96.2
January 1926	0.747	57.9	93	189	264	380	423	264	96.3
January 1927	0.748	57.7	92	185	264	383	421	264	96.5
Average	0.746	58.2	102	195	264	378	427	266	96.3

TABLE 2—Average Results of Motor Gasoline Surveys
SUMMER

Survey—	Specific Gravity	A.P.I. Degrees	First Drop	Per Cent 20	Per Cent 50	Per Cent 90	End Point	Aver. B.P.	Pct. Recvd.
July 1920	0.749	57.4	130	208	268	388	446	277	96.7
July 1921	0.747	57.9	125	202	262	377	433	270	96.7
July 1922	0.752	56.8	121	208	270	375	429	273	96.8
July 1923	0.751	56.9	125	206	269	382	436	273	96.8
July 1924	0.751	56.9	107	200	271	390	431	273	96.6
July 1925	0.754	56.2	108	204	275	387	427	275	96.2
July 1926	0.750	57.2	100	194	266	382	421	267	96.7
Average	0.751	56.9	117	203	269	383	432	273	96.6

TABLE 3—Average Results of Motor Gasoline Survey, January, 1927

District—	Specific Gravity	A.P.I. Degrees	First Drop	Per Cent 20	Per Cent 50	Per Cent 90	End Point	Aver. B.P.	Pct. Recvd.
New York City	0.748	57.7	98	194	276	389	425	272	96.7
Washington	0.759	54.9	100	189	264	372	417	259	96.9
Pittsburgh	0.748	57.7	94	178	250	379	428	257	96.7
Chicago	0.745	58.5	90	181	271	387	427	269	95.3
New Orleans	0.745	58.5	96	191	270	382	425	269	96.9
St. Louis	0.744	58.7	94	183	269	389	426	267	96.4
Bartlesville	0.735	61.0	85	180	270	390	426	264	96.0
Denver	0.750	57.2	87	182	262	378	413	260	96.5
Laramie	0.750	57.2	81	183	255	362	398	254	96.8
San Francisco	0.756	55.7	91	191	263	388	424	265	96.3
Average	0.748	57.7	92	185	264	383	421	264	96.5

A complete copy of Serial 2795, containing detailed tables of the results of the distillation tests, can be obtained on application to the Information Division, Bureau of Mines, Washington, D. C.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

The Question and Answer Department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

FUEL CONSUMED IN REFINING

I should like to obtain the figures showing the volume or percentage of fuel oil consumed in relation to the products made in refineries?—R. McG.

According to data obtained from the Bureau of Mines, approximately 740,000,000 bbls. of crude were run to the stills in 1925. The yields, in terms of barrels, were.

Gasoline	259,601,000
Kerosene	59,689,000
Gas and Fuel Oils	364,991,000
Lubricating Oils	31,055,000
Wax	2,124,000
Asphalt	15,071,000
Coke	5,292,000

There is no information available which will show the distribution of the fuel used on the basis of the products obtained. The refineries consumed in round numbers, 50,000,000 bbls. of fuel oil, 6,000,000 tons of coal and 120,000,000,000 cubic feet of gas. If we accept 3 bbls. of fuel oil as equivalent to a ton of coal, and 18,000 cubic feet of gas, the total fuel used may be calculated to a fuel oil basis. Converting the figures in this manner, the grand total of 75,000,000 bbls. is obtained as representing the quantity of fuel oil consumed when refining 740,000,000 bbls. of crude oil, or approximately 10 per cent of the oil run is burned.

WAX FROM COAL—MONTAN WAX

Have you any information about the refining of wax from low grade coals? Are these coals in any respect similar to shale? Any details about this wax will be appreciated.—I. A. B.

Some valuable bituminous wax is extracted from certain brown coals, or lignites in Europe. This wax has a market value of approximately five cents a pound when sold in the raw state and about 20 cents after it is refined.

These particular lignites are not similar to shale because the hydrocarbon material may be extracted from the coal by means of a solvent which has no action on the oil shales. The brown coals have a very low heating value, usually below 6,000 B.t.u., contains about 50 per cent water and the ash may be over 20 per cent. The shales have to be heated to produce the oil and other bituminous material. When the brown coals are heated very heavy oils or tars are produced.

The special wax obtained from the brown coals by the extraction process is known as montan wax. The approximate composition of this wax is:

	Per cent
Carbon	82
Hydrogen	13
Oxygen	4
Sulphur	1

The process for obtaining the wax from the lignite is applied to powdered and dried coal. The solvent may be either gasoline, benzol, alcohol, or mixtures of these. The extraction is made in closed chambers, which are heated for the purpose of accelerating the removal of the wax and to evaporate excess solvent. The crude wax is run off from the bottom of the extractor. The crude wax is finished by the ordinary methods, including treating and filtering.

Montan wax has a melting point around 185 Fahrenheit. The principal uses include furniture polish, shoe polish, floor dressing, talking machine records, insulating material, etc.

DETERMINATION OF SULPHUR IN PETROLEUM PRODUCTS

Will you kindly give me an outline of an easy and quick method for determining sulphur in different petroleum products?—F. T. B.

All of the methods for the determination of sulphur in the different petroleum oils require special apparatus which should be used by a trained chemist. The oxygen bomb is adapted to the determination of sulphur in lubricating oils, fuel oils, and crudes. Probably the burning test is used more frequently than any other, because of the importance of sulphur in gasoline and kerosene.

The standard method is that which has been described by the American Society for Testing Materials, the details of which, together with the bomb method, are to be found in Technical Paper 323-A of the Bureau of Mines. The burning test has been modified by E. S. Squire and described in the Journal of the Society of Chemical Industry. An outline of this method may be of interest to you.

A known quantity of sodium carbonate is placed in an absorption tube, together with an indicator. A weighed lamp containing the oil is lit and the products of combustion are drawn through the solution. The burning is continued until the sodium carbonate is neutralized, as shown by the color change in the indicator. The flame is immediately extinguished, and the lamp again weighed. The sodium carbonate is known to be equivalent to a certain quantity of sulphur. This quantity is contained in the weight of oil burned, and the percentage can therefore be calculated. In this method the calculation is based on measurements of the quantity of sodium carbonate used and the quantity of oil burnt. Small quantities of sodium carbonate are easily used in the form of N/160-solutions. If 10 c. c. are used an accuracy of 1 per cent can be obtained. This quantity of sodium carbonate is equivalent to 0.001 g. of sulphur, which is contained in 1 g. of oil containing 0.1 per cent. This weight of oil can be obtained to within 1 per cent, on a comparatively rough balance. Further, 1 g. of kerosene can be burned in about half an hour, so that a result can be obtained on this product in about 35 minutes.

The indicator is included in the standard sodium carbonate solution, and is used in the presence of 1 c. c. starch solution, so that only one measurement is required. The solutions are:

A. For oils containing more than 0.25 per cent sulphur use N/80 sodium carbonate, each liter containing 38 g. potassium iodide and 5.3 g. potassium iodate.

B. For oils containing 0.06 to 0.25 per cent sulphur, use N/160 sodium carbonate, containing 25 g. potassium iodide and 3.5 potassium iodate to the liter.

SPECIAL STEELS FOR DRILLING TOOLS

The bits, fishing tools, etc., now being used do not lose temper when heated. Is this accounted for by special treatment of the steel or is it because of special composition?—F. H.

The ordinary heat treatment for the hardening of steel is not satisfactory for the metal which is to be used for drilling. Under the conditions met with in deep drilling considerable temperature is developed on the face of the tools, and this high temperature, with gradual cooling softens ordinary steels. Until a few years ago it was the practice to use black diamonds for drilling through very hard formations and especially when core drilling. The scarcity and expense of these diamonds led to the search for some material that could be used in their place. The qualities necessary in such a material were great hardness combined with reasonable toughness, also the retention of the hardness under high temperature conditions. This problem was particularly difficult, because a material with the necessary hardness tends to be very brittle, while material of great toughness is usually lacking in great hardness.

The Petroleum Times reports the work of Merz and Schulz, who give the composition of some of these special steels.

According to information supplied by Dr. A. Merz and Professor W. Schulz, of Clausthal, and reported in Gluckauf, there have been discovered about eight different metallic materials which possess properties of special value for use as the cutting parts of drilling tools. These vary in hardness and other properties, but each is useful under certain circumstances. They are briefly described below:

	High speed steel.	Stellite	American.	Volumit.	Thoran.	Caedit.	Akrit.
	%		%	%	%	%	%
Carbon	0.5—0.9	0.5—4.0	present	present	3	2—5	
Tungsten	12—20	12—20	70	present	15	16	
Iron	73—85	1—5	present	present	2	present	
Chromium	3—6	25—35	present	present	33	34	
Cobalt	present	40—50	present	—	45	38	
Nickel	—	—	10	—	—	10	
Molybdenum	present	—	—	—	—	4	
Hardness, Moh's scale	5—6	6—7	9.8—9.9	9.8	(?)	(?)	
Softening pt., deg. C.	1,300	1,000—3,000	2,700	3,000	(?)	(?)	

There are also other materials of the same type, the composition of which and other particulars are not disclosed.

These special alloys are now made of varying composition so that a range suitable for any type of drilling, from the softest to the hardest is to be had. The experienced operator will select that which appears best suited to local conditions. The special features of these materials is that they give excellent service at high temperatures. At ordinary temperatures they have no advantage over high-speed tool steel.

CONVERSION OF GAS FUEL VALUE TO OIL BASIS

We wish to account for natural gas and the gas obtained from our stills on a common footing with the fuel oil which is burned in the plant and would like to have any suggestion you may have about this?—S. R. B.

If you have the necessary data it is possible to arrange a conversion figure on the basis of the B. t. u. values of the three fuels. These data should be representative over a long enough period to include variables caused by process and seasonal changes. In the absence of actual B. t. u. determinations, it will be necessary for you to turn to the anaylses of the gases and to assume an equivalent heat value which shall correspond with the gravity of the fuel oil. When the gas analyses are available you may calculate the heating value from the composititon as explained on this page The Oil and Gas Journal, January 6, 1927.

Clean fuel oil should have a heating value between 18,500 and 19,500 B. t. u. according to the gravity and source of the oil. Good natural gas contains the heat equivalent of 1,000 B. t. u., and refinery gas frequently runs as high as 1,200 B. t. u. There is greater need for the analysis of the refinery gas than for the other substances, because of the conditions under which it is gathered there are many opportunities for the introduciton of air and consequent reduction of the heating value.

When you have obtained the weight per barrel for the fuel oil and set down the heating value of this quantity it will be a simple matter to arrange the gas on a proper basis, if the indicated information is available.

TREATING WITH LIME

Is lime used to any extent for the sweetening of gasoline and kerosene? Any information which you may have about this will be of value to us.—U. G. C.

The hydrated lime in the powdered form, the milk of lime, and lime water are used to some extent. So far as our information goes, it appears that the most extensive use of lime in connection with gasoline and kerosene is for the sweetening of the gas which is passed through the plant for the recovery of gasoline from the vapors and gases which are collected from the tanks and stills of the refinery. Milk of lime is lime water containing an excess of lime.

Probably the greatest quantity of lime used in the refining industry is for the treatment of crude oil and as a part of the charge in one of the well-known cracking stills.

Lime is added to some crude oils for the purpose of controlling acidity and to remove some of the sulphur compounds. It is claimed that certain crudes which contain large quantities of sulphur and acids are very much improved by the application of lime to the oil while it is held in storage. It is used in the pressure still for the purpose of correcting any acid condition that may be present, to prevent acid and sulphur corrosion of equipment, and to change the composition of the coke so that it can be removed from the still and handled without difficulty.

Some years ago lime was used for treating gasoline and kerosene but better results have been obtained by the doctor and acid treatment. If lime is used for treating it will be found that large quantities must be used with much longer contact than when sulphuric acid is applied. The lime has a peculiar action on some oils in that it aids in the formation of dense emulsions which do not separate even after standing several days. The conditioning of the oil with lime before refining or treatment seems to be a good practice.

Brief Items for Plant Operators

NEW CHARCOAL PLANT NEAR GREENWOOD, LA.

A new charcoal plant has recently been put in operation near Greenwood, La., by the Owl Oil Co. The residue gas from the gasoline plant is being utilized in the manufacture of carbon black.

The gasoline plant is one of the new shop-built charcoal plants sold by the Gasoline Recovery Corp. It contains many features of the portable plant put out by this company. Each of the three charcoal absorbers is mounted on a separate base and shipped as a complete unit.

The entire condenser system is mounted on another base in much the same manner, thus making an entire assembly of units that can be easily transported. Only one unit of the carbon black plant is now in operation, and the gasoline plant is still working far below its capacity. The present production is approximately 1,200 gallons per day. The gas being treated has a gasoline content, varying between 190 and 300 gallons per 1,000,000 cubic feet.

SECOND CARTER PLANT IN SEMINOLE FIELD

The Carter Oil Co. has started operating its second natural gasoline plant in the Seminole Field of Oklahoma. It is known as the Grisso plant and is located in Section 15-9-6. It is a permanent plant with a rated capacity of 20,000,000 cubic feet of gas daily. The plant, in design, is the absorption type being similar to the two plants which the company operates in the Cromwell Field. All auxiliary equipment is electrically operated.

Before the end of the month the company will have a second plant in operation. This is known as the Searight plant and is located in Section 34-10-6. It will also have a rated capacity of 20,000,000 cubic feet of gas daily.

The company for several months has operated a two-unit portable plant located in Section 35-10-6.

CALIFORNIA STANDARD REFINING OPERATIONS

The three refineries of the Standard Oil Co. of California, in California, averaged 163,506 bbls. of crude daily in 1926, according to the annual report of the company to stockholders. The natural gasoline production of the company at the end of the year was 380,000 gallons daily from 313,000,000 cubic feet of gas. This gasoline represented the output of 47 plants in California.

In the sales end the company at the end of 1926 was operating 742 storage distributing stations and 654 automobile service stations. The company distributes its products in all the west coast states and Nevada.

MEETINGS SCHEDULED AT GASOLINE PLANTS

District meetings for those connected with the operation of natural gasoline plants in the north Texas area, will be held this month, according to an announcement by A. V. Bourque, secretary of the Association of Natural Gasoline Manufacturers. The first meeting will be held at Ranger, Tex., March 22, followed by a meeting at Wichita Falls, Tex., on March 25.

The meetings will be similar to those which have been held in other sections during the past two years. Managers, superintendents and all others connected with the operations of natural gasoline plants are invited to attend.

SHORT METHOD FOR DETERMINING LITHARGE IN DOCTOR SOLUTION

By A. G. Schuessler and E. A. Todd
(Skelly Oil Co., Eldorado, Kansas.)

At various times during the past year or so, there has appeared in the trade journals devoted to petroleum production and refining, suggested short methods for the determination of litharge content of doctor solutions. The methods suggested up to this time depend on the precipitation of the lead, either as the sulphate or chromate with subsequent centrifuging: the percentage of lead being taken from a chart or graph previously prepared, based on analyses of several solutions of known litharge content.

We do not propose to criticize these methods as we appreciate the spirit in which they were offered to the trade. It is with the same spirit and with the feeling that there is a need for such a method that prompts us to offer here a method that we have worked out at this refinery which will be found to be both rapid and accurate.

Determination by Molybdate Method

Principle:—The lead is precipitated as molybdate from a faintly acid solution and the termination of the reaction is recognized by testing a drop of the solution with a drop of tannin solution which gives a yellow coloration when an excess of ammonium molybdate is present.

Requirements: 1. A solution of ammonium molybdate prepared by dissolving about 4.25 grams of ammonium molybdate in distilled water and diluting to one liter.

2. A freshly prepared tannin solution containing 0.1 grams of tannic acid (C. P.) in 20 cc. of distilled water.

Standardization of the ammonium molybdate solution.—Accurately weigh 0.15 grams to 0.20 grams of C. P. lead foil, place in a 250 cc beaker. Dissolve in a mixture of 2 cc. concentrated nitrate acid and 4 cc. of water, evaporate nearly if not quite to dryness. The residue is taken up in 30 cc. water, 5 cc. of concentrated sulphuric acid added, the liquid shaken, the lead sulphate allowed to settle completely, filtered and washed with dilute sulphuric acid (1.10). Drop the precipitate and paper back into the original beaker, 10 cc. concentrated hydrochloric acid are added, and the liquid boiled until the paper is completely disintegrated. Add 150 cc. cold water, 13 cc. concentrated ammonia (Sp. Gr. 0.90) are carefully added whereby the acid is neutralized. A piece of blue litmus paper is thrown in and the solution made acid to the litmus paper with glacial acetic acid. Heat this solution to boiling and titrate with the ammonium molybdate solution. If T cc. of the molybdate solution are used in titrating A grams of lead the titer of the solution is:

$$1 \text{ cc. Ammonium Molybdate} = \frac{A}{T}$$

grams of lead. This may be quickly changed to equivalent grams of litharge per cc. by multiplying grams lead per cc 1.07722.

Short Cut Method

Every refinery chemist who has read this far has probably decided that this is nothing new. We will concede that it is not as this method will be found in every text on ore analyses, but here is the real short cut

Procedure.—Weigh out 5.0 grams of clear (settled or filtered) doctor solution to be tested. Place in a 250 cc. beaker, add 150 cc. distilled water, acidify with glacial acetic acid using blue litmus paper as indicator. Heat to boiling and titrate with the standard ammonium molybdate solution.

$$\frac{\text{Cc. Std. Solution} \times \text{Titer/cc.}}{\text{Wt. of Sample}} \times 100 = \%\text{PbO}$$

A shorter method though perhaps less accurate, for the standardization of the molybdate solution is as follows:—Weigh out 0.15 to 0.20 grams CP litharge; place in a 250 cc. beaker and add 50 cc. of 10 per cent ammonium acetate solution. Heat to boiling and titrate with the molybdate solution. If T cc of the molybdate solution are used in titrating A grams of litharge, the titer of the solution is:

$$1 \text{ cc. common molybdate} = \frac{A}{T} \text{ grams of litharge.}$$

Care should be taken in titrating the sample so that the endpoint will not be passed. If it is known whether the sample is spent doctor or a fresh sample a little experience will tell about how much solution to add before starting to test for the endpoint. The first appearance of yellow color in a drop of the tannic acid indicator placed on a square of white waxed paper is the endpoint. We suggest the use of white waxed paper in place of a spot plate as the drops of the

(Continued on Page 212)

ANNUAL REFINERY SURVEY IN THIS ISSUE

Through the inadvertent dropping of a line, the list of cracking processes for the refineries in the State of Illinois in the table on Page 105 of this issue is incorrect. The correct list is as follows:

ILLINOIS

Company and plant location—	Cracking Capacity	Type of Cracking Plant
Indian Refining Co., Lawrenceville	10,000	Cross, Dubbs
Lemont Refining Co., Lemont	1,000	Lemont
Lincoln Oil Refining Co., Robinson	5,000	Holmes-Manley
Lubrite Refining Co., East St. Louis	1,200	Fleming
Roxana Petroleum Corp., Wood River	15,000	Dubbs, Cross
Standard Oil Co. (Ind.), Wood River	20,000	Burton, Holmes-Manley
The Texas Company, Norfolk	6,600	Holmes-Manley
White Star Refining Co., Wood River	2,500	Dubbs

On page 109 in the list of Louisiana refineries the cracking installation at the Sinclair Refining Co.'s Mereaux refinery should be credited to the Baton Rouge refinery of the Standard Oil Co. of Louisiana.

AMONG THE TECHNICAL MEN

One of several promotions which has become effective in the manufacturing department of the Standard Oil Co. of Indiana since the first of the year concerned Harry F. Glair, who was made general superintendent of the Whiting, Ind., refinery of the company. The Whiting works is the largest of the Standard plants and one of the largest complete refineries of the oil industry.

Harry F. Glair

His first employment at the Whiting refinery was in 1906. The following year he was transferred to the Wood River, Ill., refinery of the company. After working at this plant a short time he decided to secure university training in engineering. Accordingly, he entered the University of Illinois, receiving a degree in 1912. During his summer vacation periods he was employed as machinist's helper in the electrical department of the Whiting refinery.

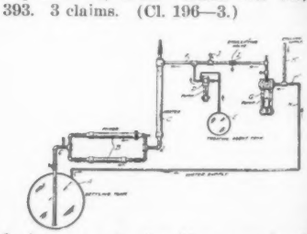
After completing the course he went to work in the drafting room at the Whiting plant. His advancement at the refinery has been steady since that time. He held several positions in the refinery—all adding to his knowledge of the various phases of petroleum refining.

In 1920 he was promoted to his first important position, that of superintendent of the paraffin plant. The following year he was made assistant superintendent of the Whiting refinery. He held that position until early this year when he was made general superintendent, succeeding Dr. G. Cash, who became refinery manager.

Recent Patents

(Additional Patents on Page 236)

1,617,737. Process for Conditioning Crude Oil Emulsions. Charles C. Averill, Houston, Tex., assignor to William S. Barnickel & Co., Webster Groves, Mo., a corporation of Missouri. Filed September 2, 1924. Serial No. 735,393. 3 claims. (Cl. 196—3.)



1. A process for breaking a crude oil emulsion characterized by adding water to the original emulsion, and then subjecting said mixture to an emulsifying operation and then to the action of a chemical demulsifying agent.

Fig. 57
300-lb. Test

Fig. 187
700-lb. Test

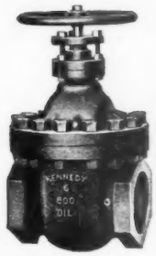


Fig. 191
1600-lb. Test

Fig. 781
2500-lb. Test

Fig. 791
2500-lb. Test

Fig. 192
1600-lb. Test

Fig. 188
700-lb. Test

Fig. 58
300-lb. Test

50th Anniversary 1877-1927

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

for oil service

KENNEDY products for the oil industry include Valves for oil or gas of all the required types with test pressure ratings ranging from 300 lbs. to 2500 lbs. per square inch, in addition to a full line of Valves of Cast-Steel, Semi-Steel, Cast-Iron and Bronze, for steam, water or air, and a complete line of Standard Malleable-Iron Screwed and Cast-Iron Flanged Fittings.

A half-century of experience is behind each Kennedy design, and is your safeguard against service troubles and maintenance expense. Ample stocks are maintained by wholesalers for immediate delivery and the manufacturing facilities of two large plants assure prompt shipment of orders for unusual requirements.

Send for the Kennedy Catalog

THE KENNEDY VALVE MFG. CO., ELMIRA, N.Y.

Branches:
NEW YORK CITY: 128-132 White St.
CHICAGO: 228 N. Jefferson St.
BOSTON: 47 India St.
SAN FRANCISCO: 448-450 Tenth St.

Sales Offices
PHILADELPHIA, CLEVELAND, ATLANTA, LOS ANGELES, SEATTLE, SALT LAKE CITY, EL PASO.

Fig. 601

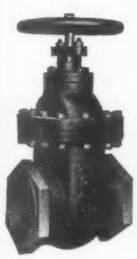


Fig. 761

Cast Steel
Fig. 908

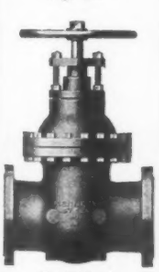

Cast Steel
Fig. 921

Fig. 611

Fig. 76

Cast Steel
Fig. 910

Cast Steel
Fig. 923

Fig. 150

Fig. 27

Fig. 103

Fig. 301

Fig. 312

Fig. 324

Fig. 201

Fig. 322

Fig. 492

Fig. 40

Fig. 544

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

GASOLINE AND NAPHTHA

	Mar. 8		Mar. 1		Feb. 22	
OKLAHOMA (Group 3)—						
50-52 450 end point (Naphtha)	.07¼	.07½	.07¾	.08	.08	.08¼
56-58 450 end point	.07		.07⅞	.07½	.08	
58-60 450 end point	.07	.07⅛	.07½		.08	.08⅛
58-60 437 end point (U. S. Motor)	.07¼	.07½	.07½	.08	.08	.08½
60-62 400 end point	.08	.08¼	.08¼	.08½	.08¾	.09
64-66 375 end point	.08¾	.09	.09	.09¼	.09½	.09¾
68-70 360 end point	.09½	.09¾	.09⅞	.10⅛	.10	.10½
64-66 437 end point (blend)	.07¼	.07½	.07½	.08	.08	.08¼
KANSAS—						
58-60 437 end point (U. S. Motor)	.07½	.07¾	.08		.08¾	.09
NORTH TEXAS—						
48-50 450 end point (Naphtha)	.07	.07¼	.07½	.07⅝	.08	.08¼
56-58 450 end point	.07	.07¼	.07½	.07⅝	.08⅛	.08¼
58-60 437 end point (U. S. Motor)	.07¼	.07⅝	.07⅝	.07¾	.08¼	.08¾
60-62 400 end point	.08	.08⅛	.08¼	.08½	.08¾	.09
64-66 390 end point	.08½	.08⅝	.08¾	.09	.09¼	.09½
64-66 375 end point	.08⅝	.09	.09	.09¼	.09½	.09¾
68-70 360 end point	.09½		.10	.10¼	.10¼	.10½
64-66 437 end point (blend)	.07¼	.07½	.07½	.07⅝	.08	.08¼
NORTH LOUISIANA—						
58-60 437 end point (U. S. Motor)	.07½	.07¾	.08	.08¼	.08½	.09
ARKANSAS—						
58-60 437 end point (U. S. Motor)	.07½	.07¾	.08	.08¼	.08½	.08¾
PENNSYLVANIA—						
52-54 Naphtha	.11	.11¼	.11½	.11¾	.11½	.11¾
54-56 Naphtha	.11	.11¼	.11½	.11¾	.11½	.11¾
58-60 Gasoline	.11¼	.11½	.11½	.11¾	.11½	.11¾
60 Gasoline	.12¼	.12½	.12½	.12¾	.12½	.12¾
62 Gasoline	.12¾	.13	.13	.13¼	.13	.13¼
64 Gasoline	.13	.13¼	.13¼	.13½	.13¼	.13½
66 Gasoline	.17	.17¼	.16½	.17	.16½	.17
68-70 Gasoline	.17¼	.17½	.17½	.18	.17½	.18
CALIFORNIA—						
58-60 437 end point (U. S. Motor) domestic	.10½	.11	.10½	.11	.10½	.11
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 end point (Naphtha)	.07½		.08		.08	.08¼
56-58 450 end point	.07	.07¼	.07¾		.08	
58-60 437 end point (U. S. Motor)	.07¼	.07½	.07½	.08	.08	.08¼
60-62 400 end point	.08	.08¼	.08¼	.08½	.09	
64-66 375 end point	.08¾	.09	.09⅛	.09½	.09¾	.10
68-70 360 end point	.09½	.09¾	.10	.10½	.10¼	.10½
64-66 437 end point (blend)	.07¼	.07½	.07¾	.08	.08	.08¼

NATURAL GASOLINE

	Mar. 8		Mar. 1		Feb. 22	
OKLAHOMA (Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05¼	.05½	.06	.06¼	.06½	.06¾
Grade A, 72-79, 375 e.p., rec. 90%	.06¼		.06½	.06⅝	.07	.07¼
Grade BB, 84-92, 375 e.p., rec. 85%	.04¾	.05	.05¼		.05½	.05¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05		.05¾		.05¾	.06
Grade C, 80-90, 375 e.p., rec. 78%	.04¼		.04¾	.05	.05	.05¼
NORTH TEXAS—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.05¼	.05½	.06¼		.06½	.06¾
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.06½	.06¾	.07	.07¼
Grade BB, 84-92, 375 e.p., rec. 85%	.04¾	.05	.05¼	.05⅜	.05½	.05¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05	.05¼	.05¾	.06	.05¾	.06
Grade C, 80-90, 375 e.p., rec. 78%	.04¼	.04½	.05	.05⅛	.05¼	
NORTH LOUISIANA—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06½	.06¾	.07	.07¼	.07⅝	.07⅝
Grade B, 76-83.9, 375 e.p., rec. 85%	.05⅞	.06	.06⅜	.06⅝	.06⅝	.06⅝
Grade C, 80-90, 375 e.p., rec. 78%	.05½	.05¾	.06	.06¼	.06¼	.06½
CALIFORNIA—						
75-86, 375-390 end point	.12½	.13½	.12½	.13½	.12½	.13½
CHICAGO DISTRICT (Based on Group 3)—						
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06¼		.06¼	.06½	.06½	.06¾
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼	.06½	.06½	.06¾	.07	.07¼
Grade BB, 84-92, 375 e.p., rec. 85%	.05	.05¼	.05¼	.05½	.05½	.05¾
Grade B, 76-83.9, 375 e.p., rec. 85%	.05½		.05¾	.06	.06	
Grade C, 80-90, 375 e.p., rec. 78%	.04¾	.05	.05		.05	.05¼

BURNING OIL

	Mar. 8		Mar. 1		Feb. 22	
KANSAS—						
41-43 water white Kerosene	.06⅛	.06⅜	.06¼	.06⅜	.06¼	.06½
OKLAHOMA (Group 3)—						
41-43 water white Kerosene	.05¾		.05¾	.06	.06	.06¼
42-44 water white Kerosene	.06¼	.06½	.06⅜	.06½	.06⅝	.06¾
NORTH LOUISIANA—						
41-43 prime white Kerosene	.06	.06⅛	.06¼		.06¼	
NORTH TEXAS—						
41-43 water white Kerosene	.05½	.05¾	.05¾	.06	.06	.06¼
ARKANSAS—						
41-43 water white Kerosene	.06	.06¼	.06¼	.06½	.06½	.06¾
PENNSYLVANIA—						
43 Kerosene prime white	.07	.07¼	.07⅜	.07½	.07⅜	.07½
45 Kerosene water white	.07¼	.07½	.07½	.07¾	.07½	.07¾
46 Kerosene water white	.08	.08¼	.08¼	.08½	.08¼	.08½
47 Kerosene water white	.08½	.08¾	.08¾	.09	.08¾	.09
300 Mineral Seal	.08½	.08¾	.08½	.08¾	.08½	.08¾
CALIFORNIA—						
38-40 water white (high burning test)	.07	.07½	.07	.07½	.07	.07½
Engine distillate, 43-45 445 end point	.07¾	.08	.07¾	.08	.07¾	.08
Engine distillate, 42-44 480 end point	.07¼	.07½	.07¼	.07½	.07¼	.07½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white Kerosene	.06	.06⅛	.06	.06¼	.06	.06¼
42-44 water white Kerosene	.06¼		.06½		.06¾	

FUEL OILS

	Mar. 8		Mar. 1		Feb. 22	
KANSAS—						
24-26 Fuel Oil	1.45	1.50	1.45	1.50	1.45	1.50
32-36 Gas Oil	.04¼	.04½	.04¼	.04½	.04¼	.04½
38-40 Distillate	.05	.05¼	.05	.05¼	.05	.05¼
OKLAHOMA (Group 3)—						
Below 22 Fuel Oil (sellers' cars)	1.15	1.20	1.15	1.20	1.15	1.20
22-26 Fuel Oil (sellers' cars)	1.20	1.25	1.22½	1.25	1.20	1.22½
24-26 Fuel Oil (sellers' cars)	1.25	1.30	1.25	1.30	1.25	1.30
26-30 Fuel Oil (sellers' cars)	1.30	1.35	1.30	1.35	1.32½	1.35
28-30 Fuel Oil (sellers' cars)	1.45	1.50	1.45	1.50	1.45	1.50
32-36 Gas Oil (dark)	.04	.04⅛	.04⅛	.04¼	.04¼	.04⅜
32-36 Gas Oil (straw overhead)	.04¼	.04⅜	.04¼	.04½	.04⅜	.04⅝
36-38 Distillate	.04¼	.04½	.04½		.04½	
38-40 Straw Distillate	.04⅜	.04½	.04½	.04¾	.04½	.04⅝
NORTH TEXAS—						
24-26 Fuel Oil (sellers' cars)	1.55		1.55	1.57½	1.55	1.57½
32-36 Gas Oil (straw)	.03⅞	.04	.04⅛	.04⅜	.04¼	.04⅜
38-40 Straw Distillate	.04¼	.04⅜	.04½		.04½	.04⅝
NORTH LOUISIANA—						
18-20 Fuel Oil	1.25	1.30	1.30	1.35	1.30	1.35
32-36 Gas Oil (straw)	.04¼	.04½	.04¼	.04½	.04⅜	.04⅝
32-36 Gas Oil (dark)	.04⅛	.04¼	.04⅛	.04¼	.04¼	.04⅜
36-38 Distillate	.04½		.04½	.04¾	.04⅝	.04⅞
ARKANSAS—						
36-38 Distillate	.04⅜	.04½	.04½	.04¾	.04⅝	.04⅞
32-36 Gas Oil (straw)	.04¼	.04½	.04¾	.04½	.04¼	.04⅝
16-20 Refinery Fuel Oil	1.22½	1.25	1.25	1.30	1.25	1.30
GULF COAST (South Texas)—						
Gas Oil	.05½	.05⅝	.05½	.05⅝	.05½	.05⅝
Fuel Oil	1.75	1.85	1.75	1.85	1.75	1.85
PENNSYLVANIA—						
30-34 Fuel Oil	.05⅞	.06	.06	.06¼	.06	.06¼
36-40 Fuel Oil	.06¼	.06⅜	.06¼	.06½	.06¼	.06½
CALIFORNIA—						
33-36 Distillate	.04	.04¾	.04	.04¾	.04	.04¾
27-32 Distillate	.03½	.04	.03½	.04	.03½	.04
15-20 Fuel Oil, Bunkers (at tide water)	.92½	1.04	.92½	1.04	.92½	1.04
15-20 Fuel Oil (cargo lots)	.82½	.87½	.82½	.87½	.82½	.87½
27 plus Diesel	1.15	1.19	1.15	1.19	1.15	1.19
CHICAGO DISTRICT (Based on Group 3)—						
24-26 Fuel Oil (sellers' cars) Group 3	1.25	1.30	1.25	1.30	1.25	1.30
22-26 Fuel Oil (sellers' cars) Group 3	1.20	1.25	1.20	1.25	1.20	1.25
18-22 (Group 3)	1.20		1.20		1.20	1.22½
16-20 (Smackover)	1.25	1.30	1.25	1.30	1.25	1.30
32-36 Gas Oil (zero)	.04¼	.04⅝	.04¼	.04⅝	.04½	.04⅜
32-36 Gas Oil (industrial)	.04	.04¼	.04⅜	.04¼	.04¼	
36-38 Distillate	.04¼	.04½	.04½	.04⅝	.04½	.04⅝
38-40 Straw Distillate	.04½	.04¾	.04¾	.04⅞	.04¾	.05

LUBRICATING OIL AND WAX

	Mar. 8		Mar. 1		Feb. 22	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¾	.07	.06	.06¼	.06¾	.07
100 vis., 3 color, 20-25 cold test	.06½	.07	.06	.06¼	.06½	.07
150 vis., 3 color, 20-25 cold test	.09½	.10	.08¼	.08½	.09½	.10
150 vis., 4 color, 20-25 cold test	.09½	.09¾	.08	.08¼	.09½	.09¾
180 vis., 3 color, 23-28 cold test	.10	.11	.09½	.10	.10	.11
180 vis., 4 color, 23-28 cold test	.10	.10½	.09½	.09¾	.10	.10½
180 vis., 5 color, 23-28 cold test	.09¾	.10¼	.09¼	.09½	.09¾	.10¼
200 vis., 3 color, 23-28 cold test	.10¾	.11¾	.10¾	.11	.10¾	.11¾
200 vis., 4 color, 23-28 cold test	.11	.11½	.10½	.10¾	.11¼	.11½
200 vis., 5 color, 23-28 cold test	.10½	.11¼	.10¼	.10½	.10½	.11¼
240 vis., 3 color, 25-30 cold test	.14	.15	.13¾	.14	.14	.15
240 vis., 4 color, 25-30 cold test	.14	.14½	.13¼	.13½	.14	.14½
240 vis., 5 color, 25-30 cold test	.13	.14	.12¾	.13	.13	.14
280 vis., 3 color, 25-30 cold test	.16	.17	.15¾	.16	.16	.17
280 vis., 4 color, 25-30 cold test	.15½	.16½	.15	.15¼	.15½	.16½
280 vis., 5 color, 25-30 cold test	.15	.16	.14¼	.14½	.15	.16
Cylinder Stocks:						
600, steam refined, light green	.08½	.11	.08½	.11	.08½	.11
600, steam refined, dark green	.06	.07	.06	.07	.06	.07
190-200 vis. @ 210 Bright Stock	.31	.35	.31	.35	.31	.35
150-160 vis. @ 210 Bright Stock	.27		.27	.31	.27	.31
Waxes:						
124-126 White Crude Scale Wax	.04	.04¼	.04¼		.04¼	
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom Neutral	.08½	.08¾	.08½	.08¾	.08½	.08¾
36 Miners' Neutral	.07¼	.07½	.07¼	.07½	.07¼	.07½
150, 3 color	.28¼	.28½	.28¼	.28½	.28¼	.28½
180, 3 color	.29¾	.30	.29¾	.30	.29¾	.30
200, 3 color	.32½	.32¾	.32½	.32¾	.32½	.32¾
220, 3 color	.34¼	.34½	.34¼	.34½	.34¼	.34½
600, steam refined	.11¼	.11½	.11½	.11¾	.12	.12¼
635, steam refined	.14¼	.14½	.14¼	.14½	.15¼	.15½
650, steam refined	.15½	.15¾	.15½	.15¾	.16¼	.16½
600, Pennsylvania flash	.19½	.20	.19½	.20	.20¾	.21
630, Pennsylvania flash	.29¾	.30	.30¼	.30½	.30¼	.30½
*550, E filtered	.18¼	.18½	.18½	.19	.18½	.19
*600, E filtered	.20	.20¼	.20	.20½	.20	.20½
600, E filtered	.18	.18½	.18	.18½	.18	.18½
600, D filtered	.25½	.25¾	.25½	.26	.25½	.26
550, E filtered	.17½	.18	.17½	.18	.17½	.18
550, D filtered	.21½	.22	.21½	.22	.21½	.22
Pennsylvania Bright Stock	.37		.37		.37	
122-124 White Crude Scale Wax	.04¼	.04⅜	.04½	.04¾	.04½	.04¾
†124-126 White Crude Scale Wax	.04⅜	.04½	.04½	.04¾	.04½	.04¾

*At Warren, Pa. †At New York City.

GULF COAST (South Texas)—							
No. 2	color, 100 vis., pale oil	.08	.09	.08	.09	.08	.09
No. 3	color, 200 vis., pale oil	.11	.12	.11	.12	.11	.12
No. 3½	color, 300 vis., pale oil	.12	.13	.12	.13	.12	.13
No. 3¾	color, 500 vis., pale oil	.14	.15	.14	.15	.14	.15
No. 4	color, 750 vis., pale oil	.16	.17	.16	.17	.16	.17
No. 5 to 6 color, 200 vis., red oil		.09	.10	.09	.10	.09	.10
No. 5 to 6 color, 300 vis., red oil		.11	.12	.11	.12	.10	.11
No. 5 to 6 color, 500 vis., red oil		.12	.13	.12	.13	.12	.13
No. 5 to 6 color, 750 vis., red oil		.15	.16	.15	.16	.15	.16
CALIFORNIA—							
130 vis., 2½-3	color	.10	.10¼	.10	.10½	.10	.10½
200 vis., 2½-3	color	.10½	.11	.10½	.11	.10½	.11
300 vis., 3 -3½	color	.11	.11½	.11	.11½	.11	.11½
350 vis., 3½-4	color	.11	.11½	.11	.11½	.11	.11½
400 vis., 3½-4	color	.12½	.13	.12½	.13	.12½	.13

REFINERY AND CRUDE PRICES

Quotations on Principal Refined Products and Crude Petroleum Markets in All the American Oil Fields

Red Neutral:								
200 vis., 4½-5	color	.09	.09½	.09	.09½	.09	.09½
300 vis., 5 -6	color	.09½	.10	.09½	.10	.09½	.10
400 vis., 5 -6	color	.11½	.12	.11½	.12	.11½	.12
500 vis., 4½-5	color	.12	.13½	.12	.13½	.12	.13½
500 vis., 5 -6½	color	.12	.12½	.12	.12½	.12	.12½
600 vis., 6½ plus	color	.12½	.13	.12½	.13	.12½	.13

Note: Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Mar. 8	Mar. 1	Feb. 22
Gasoline, U. S. Motor, 58-60 437	.12	.13	.13
Kerosene, water white, 41-43	.08	.09	.09
*Fuel Oil, bunker "C," 14-16, per bbl.	1.75	1.75	1.75
*Fuel Oil, Diesel, 28-30, per bbl.	2.40	2.40	2.40
Gas Oil, 28 plus	.06¼	.06¼	.06¼
25 pale Paraffin Oil	.13	.13	.13
28 pale Paraffin Oil	.08	.08	.08
285 red Paraffin Oil	.13½	.13½	.13½
250 red Paraffin Oil	.12½	.12½	.12½
225 red Paraffin Oil	.11	.11	.11
200 red Paraffin Oil	.10	.10	.10
Refined Wax:			
120-122 a.m.p., per lb.	.05½	.05½	.05½
125-127 a.m.p., per lb.	.05⅝	.05⅝	.05⅝
130-132 a.m.p., per lb.	.06	.06	.06
135-137 a.m.p., per lb.	.06⅜	.06⅜	.06⅜
Petrolatum, in bbls.; carload lots, per lb.:			
Dark green	.02	.02	.02
Amber	.03⅜	.03⅜	.03⅜
Extra amber	.03¾	.03¾	.03¾
Cream	.05½	.05½	.05½
Lily white	.07½	.07½	.07½
Snow white	.08½	.08½	.08½

*Lighterage 5.5c a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Mar. 8	Mar. 1	Feb. 22
Gasoline, U. S. Motor, 58-60 437, in cases	.2665	.2665	.2790
Kerosene, standard white, in cases	.1815	.1865	.1865
Kerosene, water white, in cases	.1965	.2015	.2015
600 steam refined cylinder stock, in bbls.	.20	.20	.20
635 steam refined	.22	.22	.22
650 steam refined	.23½	.23½	.23½
600 Pennsylvania flash	.28	.28	.28
630 Pennsylvania flash	.35	.35	.35
600 Warren E	.27	.27	.27
600 Oil City E	.25	.25	.25
Light 135	.46	.46	.46
Dark 135	.44	.44	.44

LOS ANGELES EXPORT PRICES

	Mar. 8		Mar. 1		Feb. 22	
Kerosene water white	.05¼	.05¾	.05¼	.05¾	.05¼	.05¾
U. S. Motor Gasoline, 53-55 437 e.p.	.08½	.09¼	.08½	.09¼	.08½	.09¼

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

*Corsicana heavy (March 5, 1927).... $1.10
Other fields .....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

*Carson County $1.05
*Hutchinson County 1.05
Gray-Wheeler Counties..See gravity table

*Humble Oil & Refining Co. and Magnolia Petroleum Co., March 7, 1927. Kay County Gas Co., March 8, 1927.

WEST TEXAS

*Iatan (Same as North Texas)
Crane-Upton-Crockett .....See gravity table

*Includes Howard County and Westbrook Fields. Kay County Gas Co. pays $1.29 for Howard County crude, effective March 5. Magnolia price effective March 5, 1927.

ARKANSAS-NORTH LOUISIANA

Cotton Valley (Feb. 24, 1927).....$1.10
Bellevue (Feb. 24, 1927) 1.00
Urania (August 26, 1926) 1.10
Calion (May 18, 1926) 1.10
Other fields .....See gravity table

Note—Cotton Valley and Bellevue, Standard Oil Co. of Louisiana, Gulf Refining Co. and Magnolia Petroleum Co.; Urania, Louisiana Oil Refining Corp.; Calion (East El Dorado), Gulf Refining Co.

GULF COAST

(Goose Creek, Hull, Liberty, West Columbia, Orange, Boling, Sour Lake, Humble, High Island, Pierce Junction and Spindletop.)

†Grade A (March 7) $1.30
Grade B .....See gravity table
*Jennings, La. (October 29, 1926)..... 1.15
†Saratoga, Batson, Dayton (December 14, 1926) 1.40
**Markham 1.15

*Gulf Pipe Line Co. †Sun Pipe Line Co. ‡Humble Oil & Refining Co., Sun Pipe Line Co., Magnolia Petroleum Co., Gulf Pipe Line Co., The Texas Company. **The Texas Company.

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

*Luling (May 18) $1.30
†Mirando (May 16) 1.25
Rockdale-Minerva (Milam County)... 1.25
*Thrall .....
Callihan (May 15) 1.75
Lytton Springs (Lockhart) See gravity table
Somerset .....See gravity table

*Posted by Magnolia Petroleum Co. Thrall prices same as north central Texas less 19⅓ cents per cwt. freight.
†Posted by Crown Central Pipe Line Co., Texpata Pipe Line Co., Humble Pipe Line Co., Magnolia Petroleum Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective March 7)

Rock Creek, Wyo. $1.42
Salt Creek .....See gravity table
Big Muddy 1.42
Mule Creek (February 23) 1.30
Grass Creek, light 1.55
Grass creek, heavy ..... .90
Elk Basin 1.55
Lance Creek 1.55
Poison Spider 1.00
Notches ..... .85
Rex Lake (February 23) 1.10
Byron (May 17) 2.50
Osage 1.55
Lake Basin (May 17) 2.40
Lost Soldier (contract) (May 17)..... 1.60
Greybull-Torchlight 2.00
Hamilton Dome 1.35
Cat Creek (Mont.) 1.55
Sunburst (Mont.) (October 5)..... 1.35
Florence (Colo.) 1.60
Artesia 1.20
Hogback (N. Mex.) 2.00

Note: Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective March 7)

Penna Grade Oil in New York Transit Line (New York) $3.15

Continued on Page 204)

CRUDE OIL GRAVITY PRICE TABLE

Gravity—	1 Okla., Kans., N. C. Tex., La.-Ark.	2 Smackover, Ark.	3 Stephens, Ark.	4 Panola County, Texas	5 Wheeler and Gray Counties, (Texas Panhandle)	6 Crane, Upton Crockett Counties (West Texas)	7 Salt Creek, Wyo.	8 Grade B & Light Crude (G. Coast)	9 Somerset, (South Central Texas)
Below 24	....	1.10	....	....	....	....	....	....	....
24 to 24.9	....	1.25	....	....	....	....	....	....	....
Below 25	....	....	....	....	....	....	....	1.26	....
25 to 25.9	....	1.25	....	....	....	....	....	1.28	....
Below 26	....	....	....	....	....	.80	....	....	....
26 to 26.9	....	1.25	....	....	....	.83	....	1.31	....
27 to 27.9	....	1.25	....	....	....	.86	....	1.34	....
Below 28	****	....	1.10	....	....	....	....	....	....
28 to 28.9	1.23	....	1.13	....	.99	.88	1.23	1.37	1.35
29 to 29.9	1.26	....	1.16	....	.93	.92	1.26	1.40	1.39
30 to 30.9	1.29	....	1.19	....	.96	.95	1.29	1.43	1.43
31 to 31.9	1.32	....	1.22	....	.99	.98	1.32	1.46	1.47
32 to 32.9	1.35	....	1.25	1.35	1.02	1.01	1.35	1.49	1.51
33 to 33.9	1.38	....	....	1.38	1.05	1.04	1.38	1.52	1.55
34 to 34.9	1.41	....	....	1.41	1.08	1.07	1.41	1.55	1.59
35 to 35.9	1.44	....	....	1.44	1.11	1.10	1.44	1.58	1.63
36 to 36.9	1.47	....	....	1.47	1.14	1.13	1.47	1.61	1.67
37 to 37.9	1.50	....	....	1.50	1.17	....	1.50	1.64	1.71
38 to 38.9	1.53	....	....	1.53	1.20	....	....	1.67	1.75
39 to 39.9	1.56	....	....	....	1.23	....	....	1.70	....
40 to 40.9	1.59	....	....	....	1.26	....	....	1.73	....
41 to 41.9	1.62	....	....	....	1.29	....	....	....	....
42 to 42.9	1.65	....	....	....	1.32	....	....	....	....
43 to 43.9	1.68	....	....	....	1.35	....	....	....	....
44 to 44.9	1.71	....	....	....	1.38	....	....	....	....
45 to 45.9	1.74	....	....	....	....	....	....	....	....
46 to 46.9	1.77	....	....	....	....	....	....	....	....
47 to 47.9	1.80	....	....	....	....	....	....	....	....
48 to 48.9	1.83	....	....	....	....	....	....	....	....
49 to 49.9	1.86	....	....	....	....	....	....	....	....
50 to 50.9	1.89	....	....	....	....	....	....	....	....
51 to 51.9	1.92	....	....	....	....	....	....	....	....
52 and above	1.95	....	....	....	....	....	....	....	....

Column 1—Oklahoma: Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., Magnolia Petroleum Co., Carter Oil Co., The Texas Company, March 5.

North Central Texas—(Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs (Southwest Texas), Iatan (West Texas, Magnolia only), Currie, Nocona, Moran and Corsicana light): Humble Oil & Refining Co., March 7; Magnolia Petroleum Co., The Texas Company, Prairie, Sinclair and Gulf Production Co., March 5.

Kansas—Prairie, Sinclair, Magnolia, Carter and The Texas Company, March 5.

Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, DeSoto, Haynesville, Homer, Pine Island and El Dorado only): Standard Oil Co. of Louisiana, March 8; The Texas Company, March 7; Magnolia Petroleum Co., Pine Island, Haynesville and Bull Bayou, March 7; El Dorado, March 8; Gulf Production Co., March 8.

Column 2—Standard Oil Co. of Louisiana, The Texas Company, Gulf, Atlantic, February 24, and Magnolia, February 25.

Column 3—Atlantic Oil Producing Co., March 8.
Column 4—Magnolia Petroleum Co., March 5.
Column 5—Humble Oil & Refining Co. only, March 7, 1927.
Column 6—Kay County Gas Co., March 8; Humble Oil & Refining Co., and Gulf Production Co., March 7.
Column 7—Midwest Refining Co., March 5, 1927.
Column 8—Humble Oil & Refining Co. (schedule ends "35 and above"), Gulf Refining Co., The Texas Company, Sun Pipe Line Co., Magnolia Petroleum Co., March 7, 1927. (Note: The Texas Company lists gravity schedule as "light crude" with Grade B having flat price. Gravity schedule applies to Grade B crude for other companies.)
Column 9—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., February 23.

****Prices for crude below 28 gravity: Arkansas-North Louisiana, $1.20, all companies; Oklahoma, Kansas and Texas, Magnolia, $1.20, March 5, 1927; Prairie and Sinclair, none; others, 3 cents less for each degree.

CALIFORNIA CRUDE PRICES

*Standard Oil Co.-Union Oil Co. (Effective March 11, 1926)

Gravity—	Long Beach Huntington Beach Richfield Brea-Olinda Rosecrans-Domingues Torrance-Inglewood	Whittier La Habra Montebello	Kern River Newhall McKittrick Midway-Sunset Elk Hills Lost Hills Belridge	Coyote	Santa Fe Springs	Coalinga	Wheeler Ridge	Santa Maria Ventura Salt Lake
14°	.85	.85	.75	.85	....	.75	.75	.85
15°	.87	.85	.75	.85	....	.75	.75	.85
16°	.90	.85	.75	.85	....	.75	.75	.85
17°	.94	.85	.75	.85	....	.75	.75	.85
18°	.98	.86	.75	.86	....	.75	.75	.85
19°	1.04	.87	.75	.87	....	.75	.75	.85
20°	1.10	.89	.82	.90	.89	.79	.75	.90
21°	1.16	.91	.90	.98	.91	.86	.81	.97
22°	1.22	.94	1.00	1.06	.94	.93	.85	1.04
23°	1.28	.97	1.11	1.14	.97	1.00	.89	1.11
24°	1.34	1.01	1.22	1.22	1.02	1.07	.93	1.18
25°	1.40	1.05	1.33	1.30	1.08	1.14	.97	1.25
26°	1.46	1.09	1.44	1.33	1.16	1.21	1.01	1.32
27°	1.52	1.13	1.55	1.46	1.24	1.28	1.05	1.39
28°	1.58	1.17	1.66	1.54	1.32	1.35	....	1.46
29°	1.64	1.21	1.77	1.62	1.40	1.42	....	1.53
30°	1.70	1.25	1.88	1.70	1.48	1.49	....	1.60
31°	1.76	....	1.99	....	1.60	1.56	....	1.67
32°	1.84	....	2.10	....	1.72	1.63	....	1.78
33°	1.92	....	2.21	....	1.84	1.70	....	1.79
34°	2.00	....	2.32	....	1.96	1.77	....	1.85
35°	2.08	....	....	....	2.08	1.84	....	1.92
36°	2.16	....	....	....	2.16	....	....	....
37°	2.24	....	....	....	2.24	....	....	....
38°	2.34	....	....	....	2.34	....	....	....
39°	2.44	....	....	....	2.44	....	....	....
40°	2.54	....	....	....	....	....	....	....
41°	2.64	....	....	....	....	....	....	....
42°	2.74	....	....	....	....	....	....	....

*Column 2—Long Beach and Huntington Beach crudes, 14 to 32 degrees, inclusive; Richfield and Brea-Olinda, 14 to 30 degrees; Torrance and Inglewood, 14 to 28 degrees; Domingues, 24 to 42 degrees. Rosecrans crude ranges from 14 to 42 degrees, but only Union Oil Co. posts below 24 degrees.

Column 3—Whittier and La Habra crudes, 14 to 22 degrees; Montebello, 14 to 20 degrees.
Column 4—Kern River, Newhall and McKittrick, 14 to 19 degrees; Midway-Sunset and Elk Hills, 14 to 33 degrees; Lost Hills and Belridge, 14 to 34 degrees.
Column 6—Santa Fe Springs. Only Union Oil Co. posts below 24 degrees.
Column 9—Salt Lake, 14 to 19 degrees, inclusive; Santa Maria, 14 to 30 degrees; Ventura, 14 to 35 degrees. Posted only by Union Oil Co.

TANK WAGON MARKETS

Tankwagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns, March 8.

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

Main Service Station Price

Tankwagon prices on April 19, 1922: g. up 1½c; May 8, up 1c; June 27, g. and k. up 1c; July 19, g. down 2c; k. down 1c; Oct. 10, g. down 2c; Oct. 21, g. down 1c; Feb. 6, 1923, g. up 1c; Feb. 20, g. up 1c; Aug. 14, g. down 6.6c; Oct. 4, k. down 1½c; No. 10, g. down 1.4c; Dec. 20, g. up 2c; Pan. 12, 1924, g. up 2c; k. up 1c; Feb. 5, g. up 2c, k. 1c; July 18, g. down 1c; July 30, g. and k. down 1c; Sept. 12, g. down 2c; Jan. 23, 1925, g. up 1c; Jan. 26, g. up 1c; Jan. 31, g. up 1c; Feb. 12, g. up 2c, k. up 1c; April 19, g. down 1c; July 14, g. up 1c; Aug. 25, g. down 2c; k. down 1c; Sept. 1, g. down 1c; Feb. 4, 1926, g. up 1c, k. up 1c; April 16, k. up 1c; April 24, k. up ½c; April 29, g. up 1c, k. up ½c; May 6, k. up ½c; May 17, g. and k. up 1c; July 1, k. down 1c; July 3, k. down 1c; Aug. 13, k. up 1c; Aug. 24, k. up 1c; Oct. 13, k. down 1c; Oct. 26, g. and k. down 1c; Jan. 12, 1927, g. down 1c, k. down 0.4c to 1.5c according to state except Indiana and Michigan; March 1, g down 1c.

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Chicago dist.	16.0	18 0	...	13 0
Decatur, Ill.	16.2	18 2	...	13 6
E. St. Louis	15 1	17.35	...	12 7
Joliet	16 4	18.4	...	13 8
Peoria	16 2	18 2	...	13 6
Quincy	16 2	18 2	...	13 4
Davenport, Ia.	18 5	20 5	2 0	13 5
Des Moines	16 0	18 0	2.0	13.5
Keokuk	18 5	20 5	2 0	13.5
Sioux City	18 7	20.7	2 0	13 1
Duluth, Minn.	19 5	21.5	2 0	13 9
Minneapolis	17.2	19.2	2 0	13 9
LaCross, Wis.	19 2	21 2	2 0	14.0
Milwaukee	18.1	20 1	2 0	12 9
Madison	18 3	20 3	2 0	13.1
Detroit, Mich.	18 8	20 8	2 0	14.7
Grand Rapids	18.7	20 7	2.0	14 6
Saginaw	18.9	20 9	2 0	14 8
Evansville, Ind.	19 0	21 0	3 0	14.0
Ft. Wayne	19 4	21.4	3 0	14 4
Indianapolis	19.2	21.2	3 0	14 2
S. Bend	19 4	21 4	3.0	14 4
Fargo, N. D.	20 9	22 9	2 0	15 9
Huron, S. D.	20.5	22.5	3 0	14 9
Sioux Falls	19.3	21.3	3 0	14 4
*K. C., Mo.	18.0	20.0	3.0	11 9
*Springfield	18.8	20 8	3.0	12 8
*St. Louis	17.6	19 9	2 5	12 6
*St. Joseph	18.5	20 5	3.0	12 5
Wichita, Kans.	17 8	19 8	2.0	13 3
Bartlesville, Ok.	17.8	19 8	3.0	11 8

NAPHTHAS

	Tank wagon	Tank car
Oleum spirits	18.0	13.5
V. M. & P. naphtha	20.0	15.5
Cleaner's naphtha	20.0	15.5
Stanisol	21.0	....

Tankwagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL

Less than 100 gallons	10.0
100 to 799 gallons	9.0
800 or more gallons	8.5

Tankwagon prices of gasoline subject to discount of 1 cent a gallon on dumps of 50 gallons or more throughout territory except Chicago district where discount applies only to dumps of 100 gallons. Kerosene subject to 1 cent discount on dumps of 50 gallons or more.

In addition the following quantity discount schedule is in effect on monthly tankwagon deliveries of gasoline 6,000 gallons or more, 1¼ cents; 10,000 gallons or more, 2 cents; 15,000 gallons or more, 3 cents. In the Chicago district purchases of 750 to 2,000 gallons a month discounted one-half cent; and, 2,000 to 6,000 gallons, three-quarters cent. If the quantity bought during the year is 12 times the monthly agreed purchases the discount is paid or credited on the entire quantity less monthly payments.

Monthly service station deliveries of 200 gallons or more, and annual deliveries of 2,400 gallons or more are discounted 2 cents.

***State tax 2 cents; remainder city tax.**

SOUTHWESTERN DISTRICT

***Magnolia Petroleum Co.**

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Dallas, Tex.	13 0	17 0	1.0	15.0
Fort Worth	14.0	15.0	1.0	13.0
Houston	14.0	17.0	1.0	15.0
San Antonio	14 0	17 0	1.0	14 0
El Paso	15 0	17 0	1.0	16.0
Texarkana	15.0	18.0	1.0	15.0
Muskogee, Okla.	16 0	19 0	3 0	11.0
Okla. City	16 0	19 0	3 0	12.0
Tulsa	16.0	19 0	3 0	12.0
Little Rock	18.0	21.0	4.0	13.0
Ft. Smith, Ark	18.0	21.0	4.0	13.0

***The following is the schedule of discounts on quantity gasoline sales adopted by the Magnolia Petroleum Co. in Oklahoma: Over 750 gallons a month, ½c; over 2,000 gallons, ¾c; over 3,000 gallons, 1c; over 4,500 gallons, 1¼c; over 6,000 gallons, 1½c; over 9,000 gallons, 1¾c; over 10,000 gallons, 2c. If the quantity bought during the year is 12 times the monthly agreed purchases, the discount will be paid or** credited on the entire quantity for the year less any monthly purchases.

The schedule on service station deliveries is: Over 200 gallons a month, 1c; over 300 gallons a month, 1¼c; over 400 gallons, 1½c; over 500 gallons a month, 1¾c; over 600 gallons, 2c. The same rule applies for annual purchases as in the tankwagon discounts.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
*New Orleans	16 5	19 5	3.0	14.0
Alexandria	16.0	19.0	2.0	15.0
Baton Rouge	15.0	18.0	2.0	13.5
LaFayette	16 0	19 0	2.0	14 5
Lake Charles	16.5	19.5	2.0	15.0
Shreveport, La.	15.0	18.0	2.0	14.0
Memphis, Tenn.	17.0	20.0	3.0	15.0
Chattanooga	19.5	22 5	3.0	15 0
Knoxville	19.5	22.5	3.0	16.0
Nashville	18.0	21.0	3.0	16.0
Bristol	20 0	23.0	3 0	15 0
Little R'k, Ark.	18.0	21.0	4.0	13.0

***Tax of 3c includes city tax of 1c.**
***Louisiana kerosene prices include 1-cent state tax.**

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
All Ohio points	21.0	23.0	2.0	17.0

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Atlanta, Ga.	20.0	23.0	3.5	18 0
Augusta	20 0	23 0	3 5	17 0
Macon	20 0	23 0	3 5	18 0
Savannah	20 0	22.0	3.5	16 0
Birm'ghm, Ala.	22.0	25 0	4 0	17 5
Mobile	21 0	24.0	4 0	16.0
Montgomery	23 0	26 0	5 0	18 5
Clarksd'le, Miss.	20.0	23.0	4.0	14.5
Jackson	20.0	23.0	4.0	15.5
Natchez	19.5	22.5	4.0	15.0
Gulfport	21.5	24.5	6.0	15.0
Vicksburg	19.5	22.5	4.0	15.0
Jack'ville, Fla.	18 0	21.0	4.0	16.0
Miami	20 0	23 0	4 0	17 5
Pensacola	19 0	22 0	5.0	16 5
Tampa	18.0	21 0	4 0	16.0
Covington	21.0	24.0	5.0	17.0
Louisville	22.0	25.0	5.0	17.0
Lexington, Ky.	22.0	25.0	5.0	17.0

In addition to the state tax of 3c on gasoline, Montgomery has city tax of 1c on gasoline and ½c on kerosene. Prices in Georgia include ½c inspection fee on gasoline and kerosene; in Florida, an inspection fee of 0.125c; in Alabama, an inspection fee of ½c on kerosene only. Pensacola tax includes 1c city levy. Gulfport tax includes privilege tax of 2c in addition to state tax.

PENNSYLVANIA-DELAWARE AND PART NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Pittsburgh, Pa.	18.0	*23.0	...	15 0
Philadelphia	18 0	*23 0	...	15 0
Scranton	18 0	*23 0	...	15 0
Allentown	18 0	*23.0	...	15 0
Altoona	18 0	*23.0	...	15 0
Erie	18 0	*23 0	...	16.0
Dover, Del.	20 0	23 0	2 0	15.0
Wilmington	20 0	23.0	2 0	15.0
Spring'd, Mass.	21.0	23.0	...	17.0
Worcester	21.0	23.0	...	17.0
Boston	20.0	23.0	...	15.0
Providence, R.I.	22.0	24.0	1.0	17.0
Hartford, Conn.	23.0	25.0	2.0	17.0
New Haven	23.0	25.0	2.0	17.0

***Includes tax of 2 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State.**

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Atlantic City	18 0	....	...	15 0
Newark, N. J.	18 0	20.0	...	15.0
Annapolis, Md.	20 0	....	2 0	15.0
Baltimore	20 0	23 0	2.0	10.0
Cumberland	20 0	23 0	2 0	14 25
Washington	20 0	23.0	2 0	12 5
Danville, Va.	22.5	....	4 5	15 0
Norfolk	22 5	25 5	4 5	15.0
Petersburg	22 5	25.5	4 5	15 0
Roanoke	22 5	25 5	4 5	15.0
Richmond	22 5	25.5	4 5	15.0
Charleston, W. Va.	21.5	24.5	3.5	15 0
Keyser	21 5	....	3 5	15.0
Parkersburg	21 5	24 5	3 5	15 0
Wheeling	21 5	24 5	3.5	15 0
Charlotte, N. C.	22 0	25.0	4.0	15 0
Hickory	22.0	....	4.0	15 0
Mt. Airy	22 0	25 0	4 0	15 0
Salisbury	22 0	25 0	4 0	15.0
Charl'stn, S. C.	23 0	26 0	5.0	15 0
Columbia	23 0	26.0	5.0	15.0

PACIFIC COAST DISTRICT

Standard Oil Co. (California

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
San Francisco	16.0	19.0	2.0	15.5
Los Angeles	15.5	18.5	2.0	16.5
Fresno	16.0	19.0	2.0	17.5
Reno, Nev.	22.0	25 0	4 0	19 0
Portland, Ore.	17.0	20.0	3.0	16.5
Seattle, Wash.	16.0	19.0	3.0	16.5
Tacoma	16.0	19.0	3.0	16.5
Spokane	20.0	23.0	3.0	20.5
Phoenix, Ariz.	22.0	25.0	3.0	20.5

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Albany, N. Y.	21 0	23 0	...	17 0
*New York	21 0	25 0	...	17.0
Buffalo	19.0	22 0	...	14 0
Rochester	19 0	22 0	...	14 0
Syracuse	21.0	23.0	...	17 0
Boston, Mass.	21.0	23 0	...	15 0
Augusta, Me.	24.0	27 0	3.0	17.0
Manchester, N. H.	23 0	25.0	2.0	17 0
Burlington, Vt.	23.0	25 0	2 0	17.0

***Price in steel barrels.**

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Omaha	16 25	19 25	2.0	13 25
McCook	19.75	21.75	2.0	14.75
Norfolk	18 0	20.0	2 0	13.75
N. Platte	19.75	21.75	2.0	14.50
Scottsbluff	19 25	21.25	2.0	14.00

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incids tax of	Tank wagon
Denver, Colo	19 0	21.0	2 0	15.5
Pueblo	17.0	19.0	2.0	15 5
Grand Junction	22 5	24 5	2.0	19.0
Casper, Wyo	20 0	22 0	3 0	14.0
Cheyenne	21 0	23 0	3.0	15.5
Butte, Mont.	22.0	32.0	3.0	19.0
Helena	24.0	26.0	3 0	19.0
Salt Lake, Utah	23.0	25 0	3 5	17.0
Boise, Idaho	25 5	27.5	4.0	19.0
Twin Falls	25 5	27.5	4.0	19.0
Albuquerque, N. M.	22.0	25.0	3.0	18.0

TANK WAGON PRICE CHANGES

February 15—Standard Oil Co. of Kentucky reduced tank wagon and service station prices of gasoline 2 cents in Georgia and Florida.

February 26—Continental Oil Co. reduced tank wagon and service station prices of gasoline 1 cent in Idaho and at Salt Lake City, Utah.

February 28—Magnolia Petroleum Co. reduced the service station price of gasoline at El Paso, Tex., 1 cent.

March 1—Continental Oil Co. advanced tank wagon and service station prices of gasoline one-half cent to cover an increase in the State tax from 2½ to 3 cents. The same company advanced tank wagon and service station prices 1 cent in Idaho to cover an increase in state tax from 3 to 4 cents.

March 1—Standard Oil Co. of Indiana revised its quantity discount schedule increasing its rebates on large purchases. The revised schedule is indicated in accompanying tables.

March 2—Continental Oil Co. reduced the tank wagon price of gasoline 1 cent at Denver, Colo., and tank wagon and service station prices the same amount at Grand Junction, Colo., Casper and Cheyenne, Wyo., and Helena, Mont.

March 3—Magnolia Petroleum Co. reduced tank wagon and service station prices of gasoline 1 cent at Dallas, Tex.

March 5—Magnolia Petroleum Co. reduced tank wagon and service station prices of gasoline 1 cent in Oklahoma.

CRUDE PRICE CHANGES

In addition to changes indicated in the crude price tables, the Louisiana Oil & Refining Corp. of Shreveport, La., announced the following new schedule for Smackover, Ark., crude effective March 8: Below 24 gravity, $1.10; 24 to 27.9 gravity, $1.25; 28 to 28.9 gravity, $1.28; 29 to 29.9 gravity, $1.31; 30 gravity and above, $1.34.

Effective March 7, the Gulf Production Co. posted Crane and Upton County crudes in West Texas, meeting prices of other purchasers.

NORTH TEXAS MARKET EXTREMELY UNSETTLED

WICHITA FALLS, Tex., March 7.—Except for the purchase of approximately 40,000 bbls. of fuel oil by the city of Denver, the North Texas refined market continued inactive. All products were extremely unsettled as a result of crude price reductions. Only fuel oil was firm, the Denver purchase at $1.55 making this product tighter and enabling refiners to get from $1.55 to $1.60.

No trading of any consequence was reported in other products with both buyers and sellers uncertain as to the true market after the crude reductions. Sellers as a rule were of opinion refined markets already had discounted the crude cut, while buyers were hesitant to place orders, fearing further reductions.

U. S. Motor 58-60 437 gasoline generally was quoted from 7¼ to 7½ cents, but higher gravity markets were vague, although buyers expressed the opinion they might be able to obtain 64-66 375 gasoline as low as 8½ or 8⅝ cents. No export inquiries were reported.

Natural gasolines also found no demand and prices sagged sharply again, with the exception of Grade A, which is tight, due to the limited production. Strictly Grade B also is scarce, but there was very little market for other grades. Kerosene markets also were nominal, with quotations ranging from 5⅝ to 5¾ cents.

DEATH OF JOHN McMURRAY

John McMurray, 39, of Tulsa, Okla., died suddenly at a hospital last week. He had been suffering from a throat irritation, and death was attributed to heart trouble. Mr. McMurray was formerly a resident of Bradford, Pa., and had resided in Oklahoma for 12 years. He was formerly assistant to the head of the land department of The Texas Company. His father, S. W. McMurray, of Tulsa, and a brother, Roger McMurray, of Stroud, Okla., survive him.

CRUDE OIL PRICES

(Continued from Page 203)

Bradford District Oil in National Transit Lines (Pennsylvania)	3.15
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.05
Penna Grade Oil in Southwest Pennsylvania Lines (West Virginia)	3.05
Penna Grade Oil in Eureka Pipe Line lines (Pennsylvania)	3.00
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.85
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia)	1.55
Corning Grade Oil in Buckeye Pipe Line Lines (Ohio) (March 8)	1.65
Somerset Oil in Cumberland Pipe Line Lines (Kentucky)	1.65
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky)	.95
Keister (Pennsylvania)	1.25

MIDDLE WESTERN STATES
Ohio Oil Co.
(Effective March 7)

Lima	$1.84
Wooster	1.90
Illinois	1.73
Indiana	1.61
Princeton	1.73
Plymouth	1.26
Waterloo (Nov. 17, 1926)	1.35
***Western Kentucky**	1.46
†Cumberland, Barren, Clinton and Monroe Counties, Kentucky (February 1)	2.20
‡Oil in lines of Stoll Oil Refining Co. in Oil City, Ky. (March 2, 1927)	1.80
††Clay County, Tennessee (November 18)	2.35
§Oil Springs (Canada)	2.31
§Petrolia (Canada)	2.27

***Posted by Indian Refining Co. and Ohio Oil Co.**
†Posted by Paragon Development Co.
‡Posted by Stoll Oil Refining Co.
§Posted by Imperial Oil Co., Ltd.

MEXICO
(Effective May 13)

***Tuxpam light (f.o.b. Mex. ports)**	$1.85
†Panuco heavy (f.o.b. Mex. ports)	1.15
Tuxpam (New York)	2.15
Panuco (New York)	1.80

***Plus 32.328c tax. †17.631c tax.**

This Sign brings the motorist in!

and the Sinclair method of recommending Opaline brings him back!

Authorized Dealer

SINCLAIR OPALINE MOTOR OIL

REG. U. S. PAT. OFF.

Seals Power at every Degree of Wear

DISPLAY this sign outside your station—you tell your motoring world that you sell not just oil but *CORRECT LUBRICATION!* If you are an Authorized Opaline Dealer, you will ask a motorist to look at his speedometer and tell you how many miles his car has been driven, then you will consult the Sinclair Recommendation Index, and give him the right grade of Opaline to fit the degree of wear in his engine and seal its power!

That is the Sinclair Law of Lubrication in operation. That's the commonsense method of correct lubrication which brings the motorist in—and brings him back. Let us tell you how we co-operate with Authorized Opaline Dealers in building profitable business.

SINCLAIR REFINING COMPANY, INC.
Also Makers of Sinclair Gasoline and H-C Gasoline
45 NASSAU STREET, NEW YORK
Atlanta Boston Chicago Houston Kansas City

Entire contents copyrighted 1927 by Sinclair Refining Company, Inc.

Oil Securities Inactive and Lower

New Low Marks for 1927 for Several. Effect of The Texas Corp. Stock Dividend

By N. O. Fanning

New York Bureau, The Oil and Gas Journal, Room 543, 30 Church Street, New York City

NEW YORK, Mar. 7.—Oil securities were generally lower but comparatively inactive during the past week. Numerous low prices for 1927 were recorded. The Texas Corporation stock sold around 50 after deducting the 10 per cent stock dividend payable during the week.

The earnings of many petroleum companies for 1926 were exceptionally good, in many cases constituting a record. Yet from the viewpoint of earnings per share, and taking into account the dividends being paid and price of the companies' stocks in the market, the current level of some oil stocks would seem justified only by further increases in earnings in 1927 or 1928.

The speculation in railroad securities of the past few years seems to have been based on actual increase in earnings to levels justifying substantial advances in the market prices of the railroad stocks over levels of two or three years ago. Some of these stocks have advanced 100 per cent, 200 per cent and 300 per cent, but the net earnings on such stocks available for dividends have increased in most cases proportionately.

The present yields of oil securities based on current dividends, are in numerous cases lower than that of the railroad stocks, even at the advanced prices of the latter. Of course there are some notable exceptions.

Even when actual earnings are taken into consideration some oil securities are, at present market price levels, apparently out of line, and can be justified only by a further increase in earnings in 1927. Such increase is easily possible when the past earnings records of the oil companies are taken into consideration, many instances of net earnings being doubled in a single year being found.

On the other hand, there are many oil securities now selling in the market at prices affording a much higher yield than **stocks in the railroad** or other groups, and these securities in many cases represent companies the safety of the dividends and earnings position of which cannot be questioned.

Current earnings annd dividends are important factors in the market position of oil company securities, but there are other factors which have to be taken into consideration, including the undeniably bright future of the oil business as a whole made certain by the essential nature of petroleum products in the life of the people. So long as the intrinsic value of petroleum keeps on increasing, larger earnings can be looked for with confidence.

American Maracaibo

American Maracaibo Co. has concluded negotiations for the acquisition of the properties in Venezuela of the Venezuelan Eastern Petroleum Corp. (controlled by Pan American Eastern Petroleum Corp.), and the Maracaibo Syndicate, Inc., through exchange of shares. A special meeting of stockholders will be held March 11 to act on amendments to certificates of incorporation, providing for enlarging the board of directors to 12 and increasing the authorized capital stock to 2,000,000 shares from 750,000. The increase is for the purpose of providing for acquisition of properties and leaves the company with sufficient stock to take care of future financing.

Borne-Scrymser Co.

The balance sheet of the Borne-Scrymser Co. as of December 31, 1926, compares with 1925 as follows:

Assets	1926	1925
†Real estate, plant & equip.	$ 505,951	$ 363,520
Merchandise	402,445	471,431
Notes & accts. receivable	158,037	197,348
Cash	97,289	126,881
Other invest.	510,157	610,158
Prepaid items	498	665
Total	$1,674,357	$1,770,003
Liabilities		
Capital stock	$1,000,000	$1,000,000
Accts. payable	36,797	61,576
Accrued expenses	720	756
Reserves	67,903	78,000
Surplus	568,937	629,671
Total	$1,674,357	$1,770,003

† After depreciation.

Crystal Oil Refining

The balance sheet of the Crystal Oil Refining Corp. as of December 31, 1926, compares as follows:

Assets	Dec. 31, 1926	Aug. 31, 1926
Plant, property equipment	$2,903,352	$2,862,320
Investments in affil. co's.	58,925	.....
Cash	579,424	610,813
Accts. & Notes receivable	293,217	279,820
Int. receivable	2,840	1,832
Material & supplies	261,213	260,233
Prepaid expenses	8,167	10,248
Treasury stock	298,335	297,240
Total	$4,405,473	$4,322,506
Liabilities	Dec. 31, 1926	Aug. 31, 1926
Preferred stock	$2,603,000	$2,603,000
†Common stock	10	10
6% equip. gold trust ctfs.	457,000	478,000
Accounts payable	206,565	253,405
Accrued property taxes	31,648	53,477
Accrued income tax, 1927	30,423	24,074
Miscel. current liabilities	17,422	17,444
Deferred liabilities	3,817	4,227
Reserve for depreciation	150,000	90,000
Capital surplus	626,258	626,590
Earned surplus	279,329	172,279
Total	$4,405,473	$4,322,506

‡ Represented by 102,987 no-par shares.

Galena-Signal Oil

The statement of the Galena-Signal Oil Co. and subsidiaries as of December 31, 1926, shows total assets of $43,487,394, against $42,951,607 at the end of 1925. Cash was $1,212,790, compared with $836,619 and profit and loss surplus $1,534,483, against $1,284,417 at the close of the previous year.

The consolidated balance sheet of the Galena Signal Oil Co. as of December 31, 1926, compares as follows:

Assets	1926	1925
Plant, equip. & real estate	$20,888,408	$18,777,616
Cash	1,212,790	836,619
Investments	793,865	2,905,201
Accts. & bills receiv.	3,941,130	3,542,633
Inventories	9,090,064	10,183,593
Deferred charges	586,208	655,906
Sinking fund	24,929	47
Goodwill, trade marks, etc.	6,950,000	6,950,000
Total	$43,487,394	$42,951,607
Liabilities	1926	1925
Common stock	$16,000,000	$16,000,000
Old. pfd. stock	2,000,000	2,000,000
New pfd. stock	4,000,000	4,000,000
Accts. & notes pay.	3,720,221	3,934,774
Accrued interest, taxes, etc.	168,363	152,644
Bonds	6,692,900	7,319,700
Depr., depl. res., etc.	9,371,427	8,260,072
Surplus	1,534,483	1,284,417
Total	$43,487,394	$42,951,607

Phillips Petroleum

The report of the Phillips Petroleum Co. for the year ended December 31, 1926, shows profit of $35,040,965 after expenses, interest and federal taxes, comparing with profit of $21,243,060 in 1925. After providing $13,633,257 for depletion and depreciation, net income was $21,407,708, equal to $8.89 a share earned on the average of 2,407,082 no-par shares outstanding during the year. This compares with net income of $12,329,623, or $6.46 a share on the average of 1,906,936 shares outstanding during 1925.

The consolidated income account for 1926 compares with 1925 as follows:

	1926	1925
Gross income	$57,838,369	$35,770,893
Optg. expenses	15,202,700	9,807,218
Gen. exp., etc.	4,455,134	2,652,065
Int. & fed. taxes	3,139,570	2,068,552
Profit	$35,040,965	$21,243,060
Depr., depl., etc.	13,633,257	8,913,437
Net income	$21,407,708	$12,329,623
Dividends	7,218,408	4,630,207
Surplus	$14,189,300	$ 7,699,416

The consolidated balance sheet of the Phillips Petroleum Co. as of December 31, 1926, compares as follows:

Assets	1926	1925
Plant & prop.	$146,413,076	$107,237,939
Accts. & notes receivable	5,809,742	4,309,572
Inventories	8,737,656	10,291,275
Prepaid ex.	643,626	350,178
Cash	4,424,176	7,222,633
Due on stock warrants	6,299	.....
Def. charges	240,352	413,156
Total	$166,274,927	$129,832,753
Liabilities	1926	1925
Cap. surplus	‡$105,367,160	$ 91,177,860
Purch. money obligations	3,449,388	382,087
Notes payable	5,739,693	187,884
Accts. payable	1,821,466	1,206,920
Dividends payable	1,805,312	1,805,311
Depr. & depl. reserve	45,214,987	33,491,536
Conting. & fed. taxes	2,876,921	1,581,155
Total	$166,274,927	$129,832,753

‡ Represented by 2,407,082 no-par shares.

With reference to the outlook for the oil industry this year, Frank Phillips, president of the Phillips Petroleum Co., states in the annual report that consumption of oil is steadily increasing, and that the industry is becoming more stabilized each year.

The gas division of the Phillips Petroleum Co. sold 68,023,425,000 feet compared with 58,786,311,000 in 1925, al-

NEW YORK STOCK EXCHANGE—LIST OF ACTIVE STOCKS

Stocks—	Par	Clos. Quot. Mar. 7	Clos. Quot. Feb. 28	1927 High	1927 Low	1926 High	1926 Low	1925 High	1925 Low
Amerada Corp.	...	34	35⅞	37⅝	31½	32⅞	24⅜	..	..
Atlantic Ref., com.	100	116	117⅝	117⅝	107	128⅝	97	117½	95⅛
Barnsdall "A"	25	33⅜	35¼	35½	27	32½	23⅛	33½	18¾
California Pet., com.	25	29¼	30⅛	32⅞	29¼	38⅛	30⅞	34⅜	23⅞
Houston Oil	100	114⅝	120¼	120⅝	60½	75	50¼	85	59
Independent Oil & Gas	..	28	30⅛	32¾	27⅝	34	20¼	41¾	13½
Louisiana Oil	10	16	15½	18⅛	15	19⅝	12	23¾	13¾
Maracaibo	..	•18	•20	22⅜	18	27⅞	18⅜	35½	20⅝
Marland	..	53⅞	56¾	58½	53⅜	63⅝	49¼	60⅛	32⅝
Mid-Continent Pet.	..	36½	35⅝	39⅝	34⅜	41	25⅝	38	25⅜
National Supply	50	90½	94	95¾	82½	84⅞	55½	71	54⅝
Oil Well Supply	25	34⅜	35	40⅜	31¼	36	30	38	33⅜
Pan. Amer., B	50	61½	63½	65⅞	60⅜	72⅜	56⅛	83⅜	59½
Pan. Amer., Western B	..	30⅜	33½	37⅞	30½	46	34	49⅜	37¼
Phillips Pet.	..	56	58	60¼	54⅜	54⅞	42¼	47⅛	36¼
Producers & Refiners	50	24½	28½	32	16⅜	26	11	32⅝	12½
Pure Oil, com.	..	31¼	33⅛	32⅝	27¼	31	25⅜	33⅜	25⅛
Royal Dutch, N. Y., sh.	13.40	51⅝	51⅝	54½	50½	57⅝	49⅞	57⅝	48¼
Shell Transport	10	•45	•47	49	45	48⅞	42	49	39⅜
Shell Union, com.	..	30½	30⅞	31⅜	28⅜	30⅞	24	28⅜	21⅝
Simms Pet.	10	20¼	21⅝	22⅜	19	28⅝	16½	28½	17⅜
Sinclair Consolidated	..	19⅛	21	22⅜	18	24⅜	16⅜	24⅞	17
Skelly Oil	25	34½	36⅝	37⅝	34½	37½	27	32½	21⅜
Standard of California	25	57¼	58	60⅜	57¼	63½	54	67¼	52½
Standard of New Jersey, com.	25	37⅜	39	41⅝	37⅜	46⅜	37½	47½	38⅜
Standard of New York	25	31⅞	32¼	34½	57¼	47½	30⅝	48⅝	40
Sun Oil Co.	..	•32	32½	34⅞	32	41⅝	30¼	43⅞	38½
The Texas Company	25	50	57	58	55½	58	48	55	42¾
Texas Pacific Coal & Oil	10	14¼	15½	16⅝	14⅛	19½	12½	23⅜	11
Tide Water Oil	25	27	•29	29¼	27	39¼	27	..	..
Transcontinental	..	4⅞	4⅞	5	4½	5½	3	5⅝	3½
Union Oil of California	25	49⅝	52½	56½	48½	58⅜	37¼	43⅝	33¼
Union Tank, com.	100	96	•90	98	95	120⅜	84⅛	134	118
White Eagle Oil & Refining Co.	..	26	•27	27½	25⅝	29⅜	25⅞	31¾	25⅝
Standard Oils									
Anglo-American Oil	£1	•20⅛	20⅝	21⅝	19⅞	19¾	16⅛	26⅜	17½
Borne Scrymser	25	•62	66	69	63	75	65	240	205
Buckeye Pipe Line	50	47⅜	48	48½	45	59½	47⅝	72	63½
Chesebrough Mfg. Co.	25	•80	81½	82	76½	81½	63	74	48¾
Continental	10	20⅛	20⅝	22⅝	22	25⅞	19¼	31½	21⅞
Cumberland Pipe Line	100	120	•132	137	106	137	102	156	128
Eureka Pipe Line	100	49⅜	•49	51¼	47	53⅜	43	96	61¼
Galena Signal, com.	100	•11⅛	•11½	13½	10¼	32½	9⅞	68½	23½
Humble Oil & Refining Co.	25	54⅝	57⅝	62⅜	57⅝	68⅛	52	99	42½
Illinois Pipe Line	100	•135	136½	140½	123⅜	144	131	154½	124
Imperial Oil, Ltd.	..	42⅞	44⅛	46	37⅜	42	32½	39¼	27¼
Indiana Pipe Line	50	•65¼	•65½	69½	61	68	52¼	84	87½
International Pet. Co.	10	31⅜	33¼	34⅞	31⅝	35⅛	28⅜	25⅜	22¼
National Transit Co.	12.50	14⅜	14½	14	13⅝	20⅜	27¼	25½	16½
New York Transit	100	•33	•33	36	31¼	51½	27¼	79	50
Northern Pipe Line	100	•79⅜	79½	79¼	70	80½	64	88	67½
Ohio Oil Co.	25	58⅜	60⅞	64¼	59⅞	67⅜	55⅜	75¼	60
Penn-Mex Fuel	25	•16	17⅜	19	16½	24¼	15	44	19
Prairie Oil & Gas	25	50½	52⅞	55½	52	60¼	48	65½	45⅞
Prairie Pipe Line	100	143⅜	147	148	132	137½	122½	129⅜	105
Solar Refining Co.	100	199	194	201½	194	212	184½	259	200
South Penn Oil	25	37½	•37½	41⅝	38	50	35	197	139
Southwest Pa. Line	100	•58	63¼	58	55½	56	47⅝	84	50
Southern Pipe Line	50	16½	18	27¼	24	27	24	103	63
Standard of Indiana	25	67	70⅞	74¼	67¼	70½	61⅝	70⅜	69½
Standard of Kansas	25	•17⅜	18½	20⅞	19	36½	16½	46	30¼
Standard of Kentucky	25	118⅝	118⅜	122¼	119	134⅝	108	137	114⅜
Standard of Nebraska	25	46½	47⅞	49½	46¼	51⅝	42	270	231
Standard of Ohio, com.	100	321	332	254	335	362	192½	369	338
Swan & Finch, com.	25	•16½	16½	16	15	21	18	27	12
Vacuum Oil	25	103⅜	100½	104½	95½	109⅜	94½	169¼	80½
Miscellaneous									
Gulf Oil Corp. of Pa.	25	94	94⅝	96½	92¼	95	82½	98¼	63½
Tidewater Associated	..	20⅞	21⅝	23½	21½	27	21	..	..

•Bid, no sales. ‡Old stock. †New stock.

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange was as follows:

Mar. 7	59.34	Jan. 31	60.09	Dec. 27	60.22
Feb. 26	60.83	Jan. 24	59.89	Dec. 20	59.19
Feb. 21	60.26	Jan. 17	60.38	Dec. 13	57.90
Feb. 14	61.13	Jan. 10	59.42	Dec. 6	58.02
Feb. 7	60.51	Jan. 3	58.94	Nov. 29	57.09

though sales from the Panhandle were small, compared with future sales. "Contracts already signed," Mr. Phillips said, "assure a volume of sales to varied industries in this district in 1927 aggregating several times the 1926 total, and other contracts for the sale of large quantities of gas in this field are being negotiated."

Standard Oil of California

The annual report of the Standard Oil Co. of California, including the Pacific Oil Co., for the year ended December 31, 1926, shows net income of $55,122,014 after depreciation, depletion, federal taxes, etc., equivalent to $4.37 a share earned on the outstanding 12,594,098 no-par value shares of stock. This compares with $43,629,295, or $3.46 a share, in 1925.

The consolidated income account for 1926 follows:

Net earnings	$878,642,328
Depr. & depletion	18,670,314
Federal taxes	4,850,000
Net profit	$55,122,014
Dividends	25,192,364
Surplus	$29,929,650

[1]Includes 2,122,011 from the sale of securities.

The consolidated balance sheet of the Standard Oil Co. of California, including Pacific Oil Co., as of December 31, 1926, follows:

Assets: Properties, plant and equipment, less reserve for depreciation and depletion, $451,719,247; special trust fund, $1,150,000; investments, $10,409,237; cash, $17,022,869; accounts receivable, $23,903,146; oil inventories, $57,534,581; materials and supplies, $9,579,214; other current assets, $74,502; deferred charges, $2,410,548; total, $573,803,344.

Liabilities: Capital stock (represented by 12,594,098 no-par shares), $314,852,450; accounts payable, $8,301,948; accrued federal taxes, $4,600,000; other current liabilities, $377,105; deferred credits, $2,788,393; reserves, $14,038,271; capital surplus, $170,567,637; earned surplus, $58,277,540; total, $573,803,344.

This is the first statement of the combined Stanard Oil Co. of California and Pacific Oil properties, the merger having been effected January 1, 1926.

Simms Petroleum

The Simms Petroleum Co. declared a quarterly dividend of 37½ cents a share, payable April 1 to stockholders of record March 15, placing the stock on a $1.50 annual basis. Previous dividends have been at the rate of 50 cents semi-annually, or at the rate of $1 a year.

Marland Oil Co.

The consolidated statement of income of the Marland Oil Co. and subsidiary companies for the year ended December 31, 1926, follows:

	Year 1926	Year 1925
Gross earnings	$77,608,348.75	$64,718,281.40
Operating and administrative expense	60,938,210.11	48,607,234.79
Net. earn.	$16,670,138.64	$16,111,046.61
Other income—		
Reagan County Purch. Co.	809,364.31	
Div. Conar. Oil	9,500,000.00	7,900,000.00
Misc. income	442,654.86	$12,683.79
	$27,422,157.81	$24,623,730.40
Int. & amor. of bond disc.	322,135.43	974,283.17
Net incm. before capital exting.	$27,100,022.38	$23,649,447.23
Resvrs. for depr.	4,025,058.30	2,802,487.81
Resvrs. for depl. on lease b'n's. cost	423,174.23	595,294.44
Resvrs. for depl. on intang. drlg. cost capitized		2,476,344.26
Reserves for intang. drlg. costs	9,837,770.55	
Leases chgd. off	1,123,208.04	1,540,374.21
	$15,409,211.12	$ 7,414,455.72
Net opr. income	11,690,811.26	16,234,991.51
Other deduc.		1,435,922.30
Net income	$11,690,811.26	$ 14,799,069.21
Divds. paid	7,651,067.00	4,579,873.75
To surplus	$ 4,039,744.26	$10,219,195.46
Add:		
Surplus bal. Dec. 31, 1925	23,978,679.39	
51% Reagan County Pur. Co. earnings to Dec. 31, 1925	436,385.65	
Adj. of Fed. taxes for 1925	677,000.00	
	$29,131,809.30	
Deduct:		
Rem. of apprsl. as of July 1, 1920, charged off	16,709,175.81	
Undepl. drlg. costs prior yrs. chgd. off	3,871,566.38	
Sundry adjusts.	152,198.76	
Surplus balance	20,732,940.95	
Dec. 31, 1926	$ 8,398,868.35	

Prairie Oil & Gas Co.

The Prairie Oil & Gas Co.'s annual statement follows:

Assets

	Dec. 31, 1925	Dec. 31, 1926
Bills receivable	$ 260,000.00	$ 260,000.00
Real estate	608,532.74	684,498.08
Personal prop.	34,344,477.87	43,371,337.45
Stocks, bonds and other securities	23,500,753.82	21,987,103.47
Merchandise	72,090,553.42	79,261,239.16
Due from banks	4,517,709.98	2,433,273.06
Accts. receiv.	19,102,068.42	19,974,178.21
Total assets	$154,424,096.25	$167,971,629.43

Liabilities

Capital paid up	$60,000,000.00	$60,000,000.00
Capital sold to employes	40,125.00	157,300.00
Surplus	79,435,262.52	90,962,163.24
Accts. payable	14,948,708.73	16,852,166.19
Ttl. liabilities	$154,424,096.25	$167,971,629.43

Income Account

	1925	1926
Net earn. (after depl., depr. and taxes, incl. income tax)	$14,181,532.73	$15,962,367.10
Less div. paid to stockholders	2,400,000.00	3,606,455.55
Total	$11,781,532.73	$12,355,911.55
Adjust., depl. and depr. resrs. account inc. taxes for prior years: Add	1,620,104.90	
Deduct		829,010.83
Net to surplus	$13,401,637.63	$11,526,900.72

ONLY 37 PER CENT FREE OIL IN SEMINOLE

(Continued from Page 41)

that prompted the Carter Oil Co. to curtail its Seminole production about 35,000 bbls. a day. It is said the company could produce 70,000 bbls. a day in that field if it had the facilities to get all its production and purchases to refinery destinations.

The big Standard refinery at Baton Rouge, La. consumes about 70,000 bbls. of crude a day and the Standard of New Jersey has been shipping about 50,000 bbls. of crude a day in tankers from Baton Rouge to its Atlantic Coast refineries. However, this is not all Oklahoma-Kansas oil. Part of it is oil produced or purchased in the Arkansas and Louisiana fields.

The Standard of New Jersey would like to move more Mid-Continent crude East to relieve the western storage situation. It is considered likely that the company has considerable available storage room at its refining centers, while the tremendous flush production in Oklahoma together with the pipe line congestion, is causing a backing-up of crude that threatens to fill all the company's big tanks in Oklahoma and Kansas.

Storage Problems

Oklahoma oil companies are offering stiff resistance to tank building programs. The overproduction lies in Seminole alone and operators there are loath to store Seminole oil because of its tendency to decline rapidly in gravity. Seminole crude of 41 and 42 gravity drops to 39 degrees by the time it is taken out of the stock tank. Representatives of a number of Seminole companies have said they preferred to keep the oil in the wells rather than to produce it and run it to their own storage and watch it fall off in value. This phase of the matter has tended to make operators more willing to discuss curtailment of production by removing or cutting down on the air-gas lift in their wells.

The potential production of Seminole is enormous. No one ddubts now that the field could in a short time be made to produce 450,000 bbls. a day. But there would be no way of handling more than half of it.

It is in order to take care of the approaching big production of the Indian Territory Illuminating Oil Co. that the Empire Pipe Line Co., bought The Texas Company's tank farm in Section 35-19-6, Payne County, and will lay a 10-inch pipe line from its Banken Station, near the town of Cushing to the heart of the Seminole Field. The acquisition of The Texas Company's tank farm, which contains 22 55,000-bbl. tanks will give the Empire organization a storage capacity in the Cushing Field of more than 2,000,000 bbls. as the company already owned 25 55,000-bbl. tanks located near Oilton. The 10-inch pipe line about 50 miles in length will be constructed without delay, it is said, and the pipe has been ordered. The Empire Gas & Fuel Co. owns a controlling interest in the Indian Territory Illuminating Oil Co. which is one of the largest owners of leases in the Seminole area, and which is drilling many wells on favorable looking locations. The Empire organization has refineries in Cushing, Ponca City and Okmulgee which will be in more direct touch with the company's production in Seminole when this additional line is laid.

LOWER PRICES FOR CRUDE REFLECTED IN GASOLINES

(Continued from Page 36)

previous occasions crude reductions at this time of year are unusual and their effect on refinery markets, particularly gasolines, during the summer and the peak consumption season, will be interesting. Generally, crude reductions have come in the early part or in the midst of the gasoline season. This disturbing influence has always had a tendency to lower refinery gasoline prices at a time when under the laws of supply and demand there should be advancing markets. The crude reductions now may result in more settled conditions later in the spring and during summer with consequent firmer refinery markets.

The crude reduction came as a surprise to the majority of the trade. Previous to the reduction, a substantial volume of gasoline was being moved out of Oklahoma and the Mid-Continent to districts as far east as New York state and Virginia. This caused a somewhat better tone to the U. S. Motor gasoline market and sellers at that time felt that the market was on bottom and that there would be an immediate turn upward. Several refiners advanced their quotations from an eighth to a quarter cent during the week and held back on taking orders. This situation apparently has been dispelled because of the crude reductions, and some sellers were asking for orders, expressing a desire to meet competition.

The market Tuesday on the U. S. Motor 58-60 437 gasoline so far as could be checked was 7¼ to 7½ cents. Refiners reported being able to dispose of a few cars direct to the trade at the higher figure. Resale buyers were offering no more than 7¼ cents and even before the crude reductions some material was moved at that price. It was reported that 7-cent gasoline was available but this could not be verified. One buyer obtained a car at 7⅛ cents. Prices of lower gravity gasolines were almost entirely nominal.

Higher gravity gasolines suffered the most as has been the case the preceding weeks. Domestic demand has softened not only in line with the general inactivity but also from the seasonal decline in consumption of these grades, and, with the lack of any export movement there has been very little market. The 64-66 375 grade was freely available at 8 to 8¼ cents. These prices represented sharp declines from those of a week ago and a noticeable narrowing of margins between these grades.

Natural Gasolines

Natural gasolines continued in an extremely unfavorable situation with practically no demand and weaker prices. Strictly Grade A and Grade B are exceptions due to their limited production at this season but other material found no market, despite efforts of manufacturers to move some of their accumulating stocks. Grade C was free at 4¼ cents Tuesday with Grade Double B at 4¾ to 5 cents and Double A at 5¼ to 5½ cents. Strictly Grade A was held at 6¼ cents and Grade B at 5 cents.

Kerosenes were quoted Tuesday at 5¾ to 6 cents on the 41-43 water white grade and 6¼ cents on the 42-44 material but these figures also were practically nominal as few orders were placed. In quotations there was no change in these products over a week ago.

Distillates developed further weakness although not especially because of the crude reductions. These products have been experiencing a steady decline and weakening for several months because there has been comparatively little demand for these grades. The 36-38 straw distillate was quoted as low as 4¼ cents Tuesday with the 38-40 grade weak at 4½ cents.

Gas oils also developed a decidedly weaker tone with offers out of competition territory as low as 3⅝ cents or 3¾ cents basis Group 3, Oklahoma, material, however, was not free below 4 cents and on straw overhead gas oil little was obtainable under 4¼ cents.

Fuel Oils

Fuel oils, as mentioned, continued steady in price despite the crude cut. A few market students declared they sensed a weaker undertone but this was not outwardly apparent. The minimum spot market on any fuel was held at $1.15. Purchases continually have been made on contracts or for future shipments slightly below this for the lower gravities but these have not been the rule.

Lubricating oils indicated no further reductions in price. Several larger manufacturers reduced quotations a week ago but sellers who had been quoting from a half to as much as a cent or more under these have made no changes. This possibly has resulted in a generally more stable lubricating oil situation by elimination of many of the wide ranges of quotations.

N. P. M. A. CONVENTION OPENED AT CHICAGO

CHICAGO, Mar. 8. — The spring conference of the National Petroleum Marketers Association opened Tuesday morning at the Congress Hotel with a representative attendance of oil men, most of them from the Middle West. The first event on the program was the meeting at 2 o'clock and during the morning the members visited the oil offices or gathered in groups to discuss the present situation. There was little or no business done and few were willing to place orders for U. S. Motor gasoline even at 7¼ cents which price was freely offered. The afternoon session began with the address of the president in which he reviewed at some length the situation in the industry and especially the place of the independent distributor. His address was followed by the first subject of general discussion "Cross Competition of the Standard Units."

For the evening the oil men were the guests of the Chicago Oil Men's Club at a stag party at the Eighth Street Theater.

Twenty-seven exhibit spaces were occupied by displays chiefly of pumps and globes. The Marland Refining Co., Roxana Petroleum Corp. and Waverly Oil Works, had exhibits.

FIRST MAKER OF LARGE DRILLING TOOLS DIES

OIL CITY, Pa., Mar. 5.—Kasper Kugler, of this city, reputed to have been the first maker of modern drilling tools, died here this week. He was born in Belgium and was in his eighty-fourth year. When he was 11 years old his parents settled in Dunkirk, N. Y. There Mr. Kugler learned the blacksmith trade which eventually led him to the making of oil drilling tools. He had his first shop in Titusville when he was only 18, and he employed eight men in his shop. Later he formed a partnership with the late M. M. Mount following the early oil development. Their shop in Petroleum Center was removed to Oil City in 1873.

Mr. Kugler was the first to make a large set of drilling tools, also a set of jars used in drilling, and he had a patent on a temper screw. After disposing of his shop he entered the producing field which he followed to the time of his death.

EXECUTIVE ORDER LEASES

WASHINGTON, D. C., Mar. 5.—The President has approved the bill validating leases on executive order Indian lands.

WEST TEXAS WILDCATS

(Continued from Page 47)

Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE Sec. 333, Blk. M-6, S. K. & K. Sur. ..... Spudded and shut down.

BORDEN COUNTY

Julian Pet. and R. W. Penn's No. 1 A. J. Long, 660 ft. from N and E lines Sec. 10, Blk. 30, Tp. 4-N. ..... Slight show gas 1,445-50 ft.; hole full salt water 2,295-97 ft.; hole full sulphur water 2,325 ft.; slight show oil 3,503 ft.; hole full sulphur water 3,595-3,618 ft.; drilling 3,711 ft.

COCHRAN COUNTY

J. C. Whicker's No. 1 G. C. Landon, 300 ft. N and 5,800 ft. E SW cor. League 154 Sherman Co. Sch. Ld. ..... Drilling 1,550 ft.

COKE COUNTY

Lipan Oil Co.'s No. 1 E. C. Rawlings, CNL Sec. 330, Blk. 1-A, H. & T. C. Survey. ..... Shut down for fuel oil 3,736 ft.

CONCHO COUNTY

Harry Adams et al's No. 1 Price, C SW Sec. 78, Blk. 71, Alex Gregg Sur. ..... Location.

Associated Pet. Co.'s No. 1 Sam Waring, SW cor. Jacob Getthardt Sur. No. 2,035 ..... Fishing bit 2,300 ft.

Arkansas Fuel Co.'s No. 1 Hartgrove, SW cor. NW Sec. 49, Blk. 70, H. & T. C. Sur. ..... 1,000,000 ft. gas 1,100-10 ft.; 4,500,000 ft. gas 1,142-47 ft.; drilling hard lime 1,665 ft.; will underream 10 in.

The Exploration Co.'s No. 1 Hartgrove, Blk. 240, J. Schouch Sur. ..... Shut down 1,675 ft.

Gene Mays and others' No. 1 Hartgrove, NW SW Sec. 312, Mrs. A. Schmidt Sur., A-1173. ..... Set 10-in. 1,200 ft.; drilling 1,515 ft.

Marland Oil Co. & Taylor's No. 1 Sansom, C. NW NW Sec. 128, Blk. 72, T. & N. O. Sur. ..... Little water 1,375 ft.; drilling 1,503 ft.

Swoveland & Lewis' No. 1 Plants & Bacon, C E ½ Sec. 8, G. C. & S. F. Sur. ..... Location.

CRANE COUNTY

Church et al's No. 1 University, SE SW Sec. 34, Blk. 30 ..... Flowed 169 bbls. 2,924-75 ft.

Cromwell & Jones' No. 1 University, NW cor. SW Sec. 47, Blk. 30 ..... Drilling 250 ft.

Gulf Prod. Co.'s No. 5 Crier-McElroy, C NW NE Sec. 204, Blk. F. ..... Top lime 2,695 ft.; total depth 2,885 ft.; fishing tools 2,885 ft.; flowed 62½ bbls.

Gulf Prod. Co.'s No. 3 Crier-McElroy-A, C NE NW Sec. 198, Blk. F ..... Top salt 968 ft.; drilling 1,940 ft.

Gulf Prod. Co.'s No. 6 J. T. McElroy, C SW SE Sec. 197, Blk. F ..... Drilling 2,420 ft.

Gulf Prod. Co.'s No. 7 J. T. McElroy, C NW SW Sec. 199, Blk. F ..... Flowed 382 bbls. 2,740 ft.

Gulf Prod. Co.'s No. 1 W. N. Waddell, NE cor. Sec. 12, Blk. B-25, School Land ..... Drilling 535 ft.

Independent O. & G. Co.'s No. 7 Taylor, H. T. Sapp Sur., NE cor. ..... Drilling 3,615 ft.

Independent O. & G. Co.'s No. 8 Taylor, H. T. Sapp Sur. ..... Total depth 2,417 ft.; plugged back to 2,396 ft.; testing.

McCamey & Zoch's No. 1 Cowden Brothers ..... Spudding 200 ft.

Prairie O. & Gas Co.'s No. 1 Colette, SW cor. Sec. 35, Blk. 31, University Sur. ..... Total depth 3,670 ft.; drilling out cement.

Ben D. Simon & Cromwell's No. 1 Brookfield, C SE Sec. 23, Blk. 6, H. & T. C. Sur. ..... Three bbls. sulphur water per hour 2,570 ft.; cased off; fishing bit 3,065 ft.

Texas Dev. Co.'s No. 1 Cowden ..... Shut down 3,820 ft.

Texas Dev. Co.'s (Cooke) No. 1 Cowden, NW NW Sec. 2, Blk. E, C. C. S. D. Sur. ..... Rig.

Zweifel and others' No. 1 W. H. Cowden, SE SE Sec. 16, Blk X, C. C. S. D. Sur. ..... Drilling by tools 2,810 ft.

CROCKETT COUNTY

Anchor Oil Co. (Cumberland) No. 1 Couch, C NE Sec. 18, Blk. QR, D. & S. E. T. R. R. Sur. ..... Drilling 2,480 ft.

V. T. Bolin & Co.'s No. 1 P. C. Coates, NW cor. SW Sec. 4, Blk. 2, I. & G. N. Sur. ..... Drilling 550 ft.

Geo. A. Henshaw, Jr., No. 1 University, 1,320 feet from S and W lines SW Sec. 5, Blk. 14, University Sur. ..... Drilling 225 ft.

J. K. Hughes' No. 2-B Powell, Sec. 63, E. L. & R. R. Sur. ..... Fishing for 18 joints 8-in.; total depth 2,535 ft.

Magnolia Pet. Co.'s No. 2 Shannon, SE SE Sec. 9, Blk. BB, E. L. R. R. Sur. ..... Hole full sulphur water 2,390 ft.; drilling 2,740 ft.

William Shaffer and others' No. 1 University, C SE SE Sec. 9, Blk. 47, University Sur. ..... Total depth 2,344 ft.; plugged back to 2,208 ft.; shot 10 qts. 2,170-95 ft.; shut down.

W. W. Donnelly, Young, Logan & Huit 's No. 1 Pierce, C SW Sec. 150, Blk. O, G. H. & S. A. Sur. ..... Drilling 250 ft.

World Oil Co.'s No. 1 Schneeman, N and W SE cor. Sec. 57, Blk. BB, G. C. & S. F. Sur. ..... Top salt 1,035 ft.; top salt 1,470 ft.

J. D. Young & Cromwell's No. 1 Shannon, SE NE Sec. 4, Blk. 10 ..... Top salt 1,035 ft.; drilling 1,470 ft. drilling 2,695 ft.

Young & Cromwell's No. 1 University, C SE Sec. 23, Blk. 31, Univ. ..... Top pay 1,160-65 ft.; shut down 1,365 ft.

CROSBY COUNTY

El Capitan Oil Co.'s No. 1 O. L. Slaton, NW cor. SW Sec. 5, Blk. B-9, E. L. & R. R. Sur. ..... Drilling 1,440 ft.

CULBERSON COUNTY

James H. Gardner and others' No. 1 Radford, C SE Sec. 29, Blk. 62, Pub. Sch. Ld. Sur. ..... Spudded 275 ft. and shut down.

DICKENS COUNTY

Bowser Mickels and others' No. 1 Pitchford ranch ..... Drilling 3,200 ft.

Moutray Oil Co. and Clancey & English's No. 1 Blackwell, C SE Sec. 406, Blk. 1, H. & G. N. Sur. ..... Shut down 3,509 ft.

Moutray Oil Co. and Clancey & English's No. 1 Jones, SE cor. NW, Sec. 311, Blk. 1, H. & G. N. Sur. ..... Shut down 3,550 ft.

ECTOR COUNTY

J. S. Cosden, Inc., et al's No. 2 Connell-A, NW cor. NE Sec. 13, Blk. B-16, School Land ..... Digging cellar.

FISHER COUNTY

Baldridge, Dillard & Clark's No. 1 Weler, George Great Sur. No. 221 ..... Show gas and hole full water 2,200 ft.; water sand 2,320-68 ft.; small show oil in sandy lime 2,510-12 ft.; 600 ft. water in hole; total depth 3,150 ft.; underreaming 5-in.

Sinclair Oil & Gas Co.'s (was Bourbon Royalty Co.'s) No. 1 J. A. Danise, Sec. 6, Blk. K, T. & P. Sur. ..... Rig.

Marland Oil Co.'s (was Caldwell and others') No. 1 Rochelle, SW cor. NE Sec. 184, Blk. 3, T. & P. Sur. ..... Drilling 2,800 ft.

California Co.'s No. 1 R. G. Anderson, Sec. 22, Blk. 20, T. & P. Sur. ..... Hole full sulphur water 2,500 ft.; salt water 2,801-12 ft.; shut down 2,865 ft.

California Co.'s No. 1 Maggenheimer, SE cor. SW Sec. 15, Blk. 1, H. T. & B. Sur. ..... Hole full sulphur water 2,826-2,937 ft.; hole full water 2,975-3,000 ft. and 3,055-70 ft.; underreaming.

Danciger Oil & Refg. Co.'s (F. P. Zoch and others') No. 1 Lanius, NE cor. SE Sec. 15, Blk. Y, P. T. & P. Sur. ..... Drilling 2,650 ft.

Hucony Gas Co.'s No. 1 Langford, SW SW Sec. 7, Blk. 21, T. & P. Sur. ..... Shut down 2,055 ft. for orders.

Mason Oil Co.'s No. 1 W. A. Cross ..... Skidded rig 20 ft. east; spudded.

R. W. Raney's No. 2 Marberry ..... Shut down 2,640 ft. for fuel.

Fred Phillips' No. 1 C. M. Webb, 756 ft. S and 1,050 ft. W NE cor. Sec. 2, Blk. K. ..... Hole full salt water 2,220-40 ft.; total depth 2,475 ft.; underreaming 8-in.

Stearns & Streeter's No. 1 W. A. Howe, N and E SW cor. N ESec. 12, Blk. 23, T. & P. Sur. ..... Drilling 2,365 ft.

F. P. Zoch and others' No. 1 R. M. Clayton, C of W 160 ac. of irregular Sec. 1, J. W. Posey Sur. ..... Odor gas 2,681-2,707 ft.; hole full salt water 2,712-55 ft.; drilling 2,930 ft.

FOARD COUNTY

Humble O. & R. and Navarro Oil Co.'s No. 1 L. McAdams, C S ½ Sec. 37, Blk. L, S. P. Sur. ..... Drilling 1,880 ft.

GARZA COUNTY

Emerald Oil Co.'s No. 1 D. Boren, NW cor. NE Sec. 137, Blk. 5, H. & G. N. Sur. ..... Drilling 500 ft.

Pandem Oil Co.'s No. 1 Justice, SW cor. NW Sec. 2, Blk. 6, H. & G. N. Sur. ..... Rig.

GLASSCOCK COUNTY

J. S. Meriwether's No. 1 L. S. McDowell, C SW Sec. 43, Blk. 34, Twp. 2-S, T. & P. Sur. ..... Location.

R. R. Penn et al's No. 1 W. P. Edwards, C SE Sec. 11, Blk. 34, Twp. 2-S, T. & P. Sur. ..... Location.

Plateau Oil Co.'s No. 1 L. S. Bell, C SW Sec. 11, Blk. 35, T. & P. Twp. 5-S Sur. ..... Total depth 2,270 ft.; set 6-in.; cleaning out.

Texon Oil & Land and Marland Oil Co.'s No. 1 W. R. Settles, Sec. 160, Blk. 29, w. & N. W. Sur. ..... 400 ft. oil in 12-in. hole 1,230-45 ft.

HALL COUNTY

Seifert and others' No. 1 Owens, C NE Sec. 179, Blk. S-5, Dennison & Pacific Sur. ..... Rigging up.

HOCKLEY COUNTY

El Capitan Oil Co.'s No. 1 Ellwood, SW cor. Sec. 55, Blk. A, R. M. Thompson Sur., 18 miles NW of Lubbock. Total depth 1,900 ft.; bad hole; skidded rig and spudded 300 ft.

HOWARD COUNTY

Bowers et al's No. 1 Chester Jones, C SW Sec. 32, Blk. 27, T. & P. (3,200-ft. test) ..... Spudded and shut down.

Bristow & Merrick's No. 1 A. J. Hooks ..... Drilling 1,210 ft.

Fred Carey et al's No. 1 G. O. Chalk, SE NW Sec. 124, Blk. 29 ..... Spudded and shut down.

Comet Pet. Co.'s No. 1 H. R. Clay, S and E NW cor. Sec. 154, Blk. 29, W. & N. W. Sur. ..... Rotary; drilling 1,300 ft.

Dixie Oil Co.'s No. 1 H. R. Clay, S and E NW cor. Sec. 154, Blk. 29, W. & N. W. Sur. ..... Rotary; drilling 720 ft.

Francis & Brunson's No. 1 J. W. Furrh, C SW Sec. 11, Blk. 31, T. & P. Sur., T-1-S. ..... Location.

Gulf Prod. Co.'s No. 2 Otis Chalk, Sec. 94, Blk. 29 ..... 1,000,000 ft. gas and show oil 1,661 ft.; third gas sand 1,750-54 ft.; total gas 5,000,000 ft.; bradenheading.

Reeves & Apperman's No. 1 H. R. Clay, SW cor. SE SE Sec. 126, Blk. 29 ..... Pay 1,807-19 ft.; shot 20 quarts 1,797-1,815 ft.; bridged; cleaning out 70 ft. off bottom; swabbed 75 bbls. first 12 hours.

Marland Oil Co.'s No. 1 Bryse, C SW Sec. 34, Blk. 35, Blk 33, T. & P. Sur. ..... Rotary; underreaming 12-in. 650 ft.

Marland Oil Co.'s No. 1 Bryse, C SW Sec. 35, Blk. 34, T. & P. Sur., Tp. 1-S. ..... Hole full salt water 3,265-85 ft.; total depth 3,325 ft.; underreaming 6-in.

L. C. Harrison et al's No. 1 Dora Roberts ..... Location.

Magnolia Pet. Co.'s No. 1 Kelly Clark ..... Drilling 200 ft.

Magnolia Pet. Co.'s No. 1 Sloan Chalk ..... Drilling 529 ft.

KNOX COUNTY

Deep Rock Oil Co.'s No. 1 Jones, CSL Sec. 111, Blk. C, H. & T. C. Sur. ..... Drilling 1,485 ft.

Deep Rock Oil Co.'s No. 1 Beavers, CSL Sec. 224, Blk. 44, elev. 1,441 ft. ..... Drilling 900 ft.

Deep Rock Oil Co.'s No. 1 Big Four, 1,270 ft. south and 2,590 ft. west of NE cor. Sec. 31, Blk. 4 ..... Moving in rig.

IRION COUNTY

Cash Dollar et al's No. 1 Abe Mayer, C NE Sec. 1, Blk 10, S. P. R. R. Sur. ..... Shut down 1,670 ft.

Cash Dollar et als No. 1 G. J. Bird, NE Sec. 16, Blk. 10, S. P. R. R. Sur. ..... Shut down 950 ft.

JEFF DAVIS COUNTY

J. K. Hughes Dev. Co.'s No. J. Z. Means, 600 ft. from N line and 2,000 ft. from W line of M. Robinson Sur. No. 1 ..... Drilling 1,580 ft.

JONES COUNTY

Atlantic O. P. Co. and Landreth's No. 2 Howell ..... Building rig.

Bateman & Campbell's No. 1 Southard, C NW NW Sec. 43, Deaf & Dumb Asylum Lands ..... Run 8-in. 1,705 ft.

Campbell et al's No. 1 L. H. Herndon, Sec. 6, M. E. P. & P. Sur. ..... Shut down 1,860 ft.

Consolidated Oil Co.'s No. 1 Armand & Taylor, C S½ SW Sec. 7, Blk. 4, H. & T. C. Sur. ..... Drilling 460 ft.

Garland & Diamond's No. 1 E. D. Glynn, SE cor. Sec. 18, Deaf & Dumb Asylum Lands ..... Location.

Gibson & Johnson's No. 1 Largent, C SE Sec. 50, Blk. 149, Dewitt Co. School Land ..... Shut down 2,312 ft.

Gillette & Hickey & Cowboy Evans' No. 1 S. W. King, Manuel Bueno Sur., No. 197 ..... Good show oil 2,070 ft.; no gas; drilling up underreamer lugs; 500 feet fluid in hole.

Gillette & Hickey's No. 1 M. E. Young, Tevanio Sur. No. 190. Shut down 1,200 ft.

Grisham & Hunter & Wildman's No. 1 George B. Birchfield, Harrison Co. School Land ..... Fighting cave 2,630 ft.

Grisham & Hunter & Wildman's No. 1 Williams, Harrison Co. School Land ..... Total depth 2,539 ft.; underreaming 6-in. to 2,490 ft.

Hart & Cole's No. 1 Cranston, Sec. 10, Blk. 17, T. & P. Sur. Hole full salt water 2,650 ft.; drilling.

Hurley Oil Co.'s No. 2 John Sears ..... Straightening hole 860 ft.

Hutson & Weaver's No. 1 Smith, Sec. 51, Blk. 18, T. & P. Sur. Drilling 460 ft.

Marland Oil Co.'s No. 1 S. R. Cox, NW cor. Sec. 72, Blk. 14, T. & P. Sur. ..... Hole full salt water 3,529 ft.; ¼ baller oil and 2 bailers water per hour 3,672-75 ft.; preparing to pull pipe 3,818 ft.

Marland Oil Co.'s No. 1 Larson, C SE NE Sec. 188, B. B. D. & C. Sur. ..... Drilling 1,465 ft.

Marland Oil Co.'s No. 2 Mason, NE cor. SE NE Sec. 18, Blk. 19, T. & P. Sur. ..... Small showing oil 2,493 ft. and 2,516-30 ft.; hole full water 2,823 ft. and 2,875-93 ft.; small show oil 2,928 ft.; swabbing 200 bbls., 40 per cent water, 3,036-45 ft.

Marston Oil Co.'s No. 1 E. Howell, NW cor. SE W ½ of N 400 ac., Sec. 20, Blk 19, T. & P. Sur. ..... Drilling 2,085 ft.; hole full salt water.

Marston Oil Co.'s No. 1 J. S. Swan, Robt. Spears Sur. No. 280 ..... Moving in rig.

Mid-Continent Petroleum Corp.'s No. 1 H. Evans, NE cor. SE SE Sec. 44, S. P. R. R. Sur. ..... Drilling 1,430 ft.

Midwest Exploration Co.'s No. 3 Thornton, Sec. 18, Blk. 9, T. & P. Sur. ..... Drilling 750 ft.

Midwest Exploration Co.'s No. 4 Thornton ..... Drilling 1,625 ft.

McLester et al's No. 1 Will Myatt, Sec. 10, James Warfield Sur. ..... Drilling 1,525 ft.

Victor H. Martin's No. 1 Culbertson, Vincent Bell Sur., No. 6. Drilling 2,960 ft.

Muse & Robertson & Cowboy Evans' No. 1 Manly, C S½ S½ Sec. 35, Blk. 14, T. & P. Sur. ..... 250,000 ft. dry gas, no oil 1,640 ft.; underreaming 5-in.; total depth 1,820 ft.

Phillips Pet. Co.'s No. 1 R. M. Beasley ..... Drilling 2,260 ft.

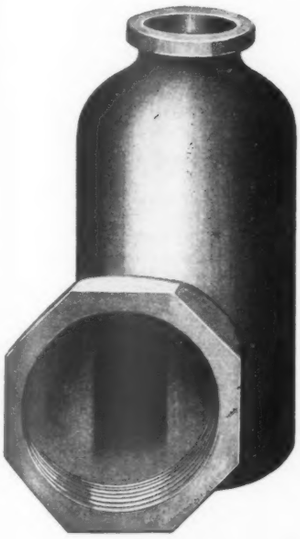
Phillips Pet. Co.'s No. 1 Mason, N and W SE cor. NE Sec. 18, Blk. 19 ..... Drilling 2,255 ft.

Phillips Pet. Co.'s No. 1 Thornton ..... Six bbls. water 1,930-45 ft.; drilling 2,460 ft.

Phillips Pet. Co.'s No. 2 Walling ..... Drilling 2,425 ft.

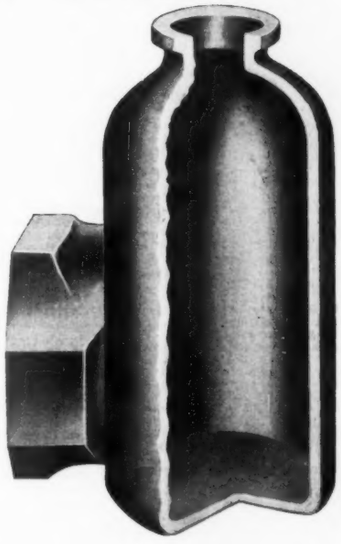
THE MAR·LEY

SPRAY NOZZLE



—Provides Fine Uniform Spray, At Low Operating Pressure, With Less Possibility of Clogging!

MARLEY Spray Nozzles are the open type with the upper whirl chamber. Its design creates a remarkable whirling motion which imparts a full, free breakup to the discharge. Large free passages throughout make it practically impossible to clog.



Complete Spray Cooling Engineering Service

—FURNISHED BY MARLEY

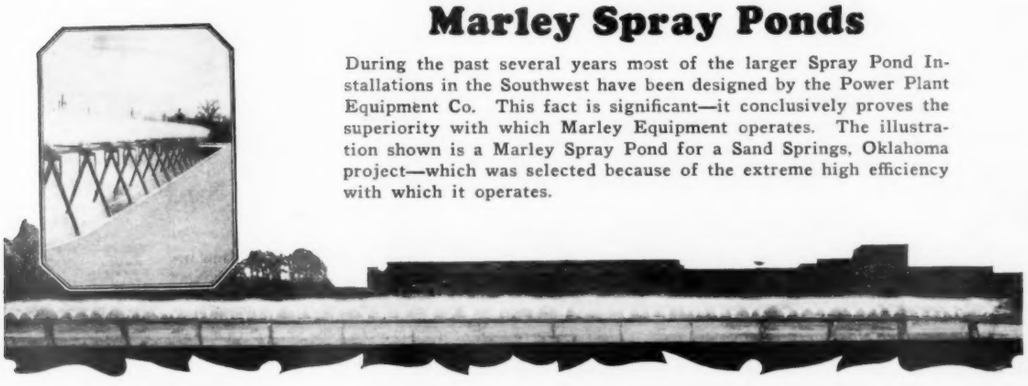
Marley Spray Ponds and Cooling Equipment are in general use throughout the country. They are recognized as being more efficient —as well as highly economical and dependable. This result is attained because Marley engineers know—*know* from many years experience in Spray Pond Engineering.

Investigation Fully Convinces

Marley Spray Ponds and Cooling Equipment are most efficient. Installations everywhere prove it. So sure are we that they will prove advantageous to you that we will be glad indeed to counsel with you —to prove the statements made.

Power Plant Equipment Co.

Coca-Cola Bldg., Kansas City, Mo.



Marley Spray Ponds

During the past several years most of the larger Spray Pond Installations in the Southwest have been designed by the Power Plant Equipment Co. This fact is significant—it conclusively proves the superiority with which Marley Equipment operates. The illustration shown is a Marley Spray Pond for a Sand Springs, Oklahoma project—which was selected because of the extreme high efficiency with which it operates.

MARLEY PPE PRODUCTS

Phillips Pet. Co.'s No. 3 Walling, N and E SW cor. Sec. 19, Blk. 19, T. & P. Sur. ... Drilling 2,100 ft.
Phillips No. 3 Joe Winters ... Rig.
Shaw & Kathke and others' No. 1 Bristow, SE SE Sec. 1, J. H. Gibson Sur. ... Shut down 500 ft.
W. G. Stough and others' No. 1 J. P. Willis ... Shut down 730 ft.; repairing spudder.
Stebbins Oil Co.'s No. 1 J. M. Higgs ... Fishing tools 855 ft.
Swensondale Oil Co.'s No. 1 Canton, SW NW Sec. 9, Deaf and Dumb Asylum Lands ... Building rig.
World Oil Co. and others' No. 1 A. W. Clark, SE cor. Sec. 15, Blk. 19, T. & P. Sur. ... Hole full salt water 1,975-2,010 ft.; more salt water 2,305 ft.; slight show oil 2,425-36 ft.; underreaming 8-in. 2,510 ft. (corrected).
World Oil Co.'s No. 1 W. H. Lee, 5,400 ft. N and 2,300 ft. E of SW cor. J. W. McKissick Sur. ... Drilling by tools 1,375 ft.
Zeigler and others' No. 1 Reeves, C SE SE Sec. 164, B. B. B. & C. Sur. ... Shut down for fuel 1,012 ft.

KIMBLE COUNTY

Dixie Oil Co.'s No. 1 Harrison, 900 ft. N NE 40 cor. S 300 ft., No. 80 Sur. ... Fishing 3,035 ft.

KING COUNTY

Hoffer Oil Co.'s No. 1 F. Patton ...

LAMB COUNTY

E. C. Marrs et al's No. 1 Yellowhouse, N line Labor 3, League 697, State Capitol Lds. ... Drilling 3,650 ft.

LUBBOCK COUNTY

Sam Arnett and others' No. 1 Bowles Ranch ... Drilling 250 ft.

LYNN COUNTY

The Hart Oil Corp.'s No. 1 C. O. Edwards, NW NW Sec. 5, Blk. 2 ... Shut down 1,400 ft.

MENARD COUNTY

J. R. Lewis and others' No. 1 White, C NW Sec. 3, J. Maltrey Sur. ... Shut down 415 ft.
Clark and others' No. 1 Kothman, NW NW Sec. 77, Kulman Sur. ... Drilling 580 ft.

MITCHELL COUNTY

Eastland Oil Co.'s No. 2 C. M. Adams ... Drilling 1,660 ft.
California Co.'s No. 1 W. H. Butler, Lease 2 ... Drilling 2,120 ft.
California Co.'s No. 1 E. Morrison, Lease 1 ... Spudding 250 ft.
Texas & Stivers' No. 1 Hardee, SE SE Sec. 85, Blk. 97, H. & T. C. Sur. ... Shut down for repairs 2,945 ft.
Texas & Stivers' No. 1 Dowlin, NW cor. Sec. 11, Blk. 27, T. & P. Sur. ... Rig.
B. H. Cogdell's No. 1-C F. E. McKenzie, WL NW NE Sec. 226, Blk. 1-A, H. & T. C. Sur. ... Shut down 125 ft.
Owen & Sloan's No. 1 C. P. Conoway, C NE Sec. 30, Blk. 28, Twp. 1-S Sur. ... Shut down 3,310 ft.
Morrison & Thompson's No. 1 Griffith, SE SE Sec. 45, Blk. 29, T. & P. Sur. ... Shut down for water 2,100 ft.
B. E. Walter and others' No. 1 J. E. Dollen, NW cor. SW Sec. 11, Blk. 27, T. & P. Sur. ... Drilling 2,890 ft.
J. C. Yancey's No. 1 Saunders, 400 ft. N and 1,700 ft. E of SW cor. Sec. 25, Blk. 25, T. & P. Sur. ... Core drill on location.

MOTLEY COUNTY

Chechaco Oil Co.'s (J. W. Pennington et al of Amarillo) No. 1 J. W. Owens, NW cor. Sec. 26, Blk. 4 (15,000-acre solid block) ... Shut down 1,050 ft.
Wheeler et al's No. 1 C. D. Bird, C NE Sec. 4, Blk. S, Stephens Sur. ... New location.

NOLAN COUNTY

A. G. Malone et al's No. 1 J. B. Carlyle ... Location.
Peters et al's No. 1 Booth ... Spudded and shut down.
Stein & Greeben's No. 1 L. W. Ross ... Location.
Thomas & Reynold's No. 1 Allen, C W ½ NW Sec. 58, Blk. X, T. & P. Sur. ... Drilling water well.
Walford et al's No. 1 H. D. Simpson ... Location.
McClesky and others' No. 1 Pepper, SE cor. SW Sec. 29, Blk. 22, T. & P. Sur. ... Rig on ground.
Phillips Pet. Co.'s No. 1 Scott, Sec. 58, Blk. 21, T. & P. Sur. ... Rig.
Zweifel and others' No. 1 Longbotham, C SE Sec. 130, Blk. 1, H. & G. N. Sur. ... Driving 12-in. 305 ft.

PARMER COUNTY

Humble O. & R. Co.'s No. 1 Farwell ... Rig burned 1,275 ft.; rebuilding; reports of gas at this depth not verified.

PECOS COUNTY

Arkansas Fuel Co.'s No. 1 H. Holmes, 2,040 ft. north and 1,520 ft. west SE cor. Sec. 16, Blk. 178, T. C. R. R. Sur. ... Location.
Benedum & Trees' No. 1 J. C. Trees, C Sec. 59, Blk. 8 ... Drilling 3,020 ft.
Buell and others' No. 1 Hagan, C N half NE Sec. 89, Blk. OW, G. C. & S. F. Sur. ... Shut down 1,875 ft.; show oil 1,700 ft.
Buell & Hagan's No. 1 McKenzie Sec. 8, Blk. 604, Mrs. A. L. Canon Sur. ... Location.
Buell & Hagan's No. 1 University, C N ½ SE Sec. 31, Blk. 24 ... Shut down 2,502 ft.; bailed 1½ bailers live oil 2,460 ft.
Buell & Hagan's No. 1 Jasper, 1 mile south and west NE cor. Jasper Co. School Land No. 104 ... Location.
California Co.'s No. 1 Union Land Co., 1,650 ft. N and 990 ft. E of most northerly SW cor. Sec. 8, Blk 110, T. C. R. R. Sur. ... Spudding 100 ft.
Cromwell & Kimberlin's No. 1 Blackman, C NW Sec. 24, Blk. 3, H. & T. C. Sur. ... Total depth 510 ft.; underreaming 12-in.
Crosby Drilling Co.'s No. 1 O. G. Yates, Sec. 70, Blk. 1, I. & G. N. Sur. ... Drilling 415 ft.
Kirby Oil Co.'s No. 1 Rhelnstrom, C NE SW Sec. 30, Blk. 2, H. & T. C. Sur. ... Driving 26-in. 330 ft.
Del Rio Drilling Synd.'s No. 1 K. C. & Ft. Stockton, C SW Sec. 19, Blk. 178, T. C. Sur. ... Shut down 740 ft.
Garland & Mott's No. 1 El Paso Cattle Loan Co., C NE Sec. 26, Blk. 126, T. & S. L. Sur. ... Location.
Kershaw & Livingston's No. 1 Cannon, SW cor. NE Sec. 54, Blk. A-2, T. C. R. R. Sur. ... Shut down 175 ft.
Mid-Kansas O. & G. Co.'s No. 3 Yates, W of SW cor. Sec. 69, Blk. 1, I. & G. N. Sur. and loc. in J. Yates Sur. ... Fishing tools 920 ft.
Quinby Oil Co.'s No. 1 Townsite, Sec. 1, Blk. 267, Client Addition Sur. Ft. Stockton ... Shut down for casing 3,440 ft.
Quinby Oil Co.'s No. 2 Bennett, C NW Sec. 592, Blk. 105, G. C. & S. F. Sur. ... Shut down 1,320 ft.; 200 ft. oil in hole from 1,216 ft.
Texon O. & L. Co.'s No. 1 I. G. Yates, C Sec. 55, Blk. 1, I. & G. N. Sur. ... Swabs 30 bbls. 1.268-1.300 ft.
John Dropplemann's No. 1 Mrs. L. Hershenson, Sec. 7, Blk. 51, T. & P. Sur., T-10 ... Spudding.
Quinby Oil Co.'s No. 1 A. A. Gray, 660 ft. north and 1,320 feet west SE cor. Sec. 593, Abst. 3,909 ... Spudding 125 ft.

REAGAN COUNTY

Cope, Hagan and others' No. 1 White, C NE Sec. 8, Blk. 11, E. L. & R. R. Sur. ... Top salt 1,091 ft.; shut down for orders 3,121 ft.; hole filling with sulphur water.
Hiawatha Oil Co.'s No. 1 University, C NL Sec. 8, Blk. 1, University ... Top salt 1,380 ft.; hole full sulphur water 3,605 ft.; shut down 4,076 ft.; will plug.
The Texas Co.'s No. 2 J. D. Sugg ... Drilling 450 ft.

REEVES COUNTY

Deep Rock Oil Co.'s No. 1 Caldwell, C SW Sec. 22, Blk. 58, T. & P. Sur., Twp. 8 ... Drilling 1,380 ft.
Humble Oil & Ref. Co.'s No. 1-B Kloh, C NE Sec. 47, Blk. 56, T. & P. Sur., T-2-S ... Fishing 1,380 ft.
World Oil Co.'s No. 1 Biggs, C SE Sec. 65, Blk. 112, Pub. Sch. Ld. Sur. ... Drilling by tools 1,810 ft.

RUNNELS COUNTY

Associated Pet. Co.'s (was Bell & Moore's) No. 1 W. W. King, 1,200 ft. W of NE cor. Lge. 14, J. V. Cobrera Sur. ... Spudded and shut down.
Moore & Bell's No. 1 Ferguson, 2,640 ft. S and 1,320 ft. E of NW cor. F. J. Ford Sur. No. 152 ... Rigging up.
Lou Ladd et al's (was Frank Yates') No. 1 R. M. McMillan ... Rigging up.

SCHLEICHER COUNTY

Beavers & Leath and others' No. 1 J. A. and W. T. Whitten, C NW Sec. 35, Blk. 11, T. O. Sur. ... Spudded and shut down.
Thomas Grey et al's No. 1 Ball Robinson, C NW Sec. 25, Blk. M, G. H. & S. A. Sur. ... Rigged up and shut down.

SCURRY COUNTY

Northwest Co.'s No. 1 T. C. Stinson, NE NW SW Sec. 101, Blk. 97, H. & T. C. Sur. ... Tested 8 bbls. 1,745 ft.; another pay at 3,402-07 ft.; bailed 7 bbls. oil in 4 hours and bailed dry; drilling 3,740 ft.

STERLING COUNTY

J. P. Williams' No. 1 Clark, NE NE SW Sec. 7, Blk. 8, G. C. & S. F. Sur. ... Fishing tools 730 ft.

TAYLOR COUNTY

City of Abilene's No. 1 fee, NW SW SE Sec. 66, Lunatic Asylum Land ... Shut down 2,264 ft.
Dorning & Perrine's No. 1 J. A. Hammer, center N 100 ac., Sec. 23, Blk. 19, T. & P. Sur. ... Spudded and shut down.
Oil Operators Trust Co.'s (was Gibson & Johnson's) No. 1 Haines & Hamilton, NE cor. W ½ SE Sec. 38 ... Drilling 2,100 ft.
Gibson & Johnson's No. 1 Hendry ... Location.
Grisham & Hunter's No. 1 D. D. Huddleston, CWL Lot 29, League 146, Grimes Co. School Land ... Shut down 2,100 ft.
Halbert et al's No. 1 Hunt, C SE Sec. 124, Blk. 64, H. & T. C. Sur. ... Spudding 260 ft.
Midwest Explin. Co.'s No. 1 Dora Smith, Jose Gabo Sur. ... Shut down 1,520 ft.
Midwest Explin. Co.'s No. 1 Toombes, Alex Thompson Sur. No. 37 ... Shut down 1,650 ft.
Morrison & Thompson's (was Noodle Creek Oil Co.'s) No. 1 Mrs. Alice Rose, SW cor. NE Sec. 29, Blk. 19, T. & P. Sur. ... Rigging up.
Roeser & Pendleton's No. 1 Sam Hutman, C W ½ NW Sec. 64, Blk. 5, T. & P. Sur. ... Spudding 100 ft.
Sanger Oil & Refining Co.'s No. 1 Cox ... Fishing tools 2,412 ft.
Sanger O. & R. Co.'s No. 1 Ike Brown NE cor. Sec. 64, Blind Asylum Land ... Drilling 1,840 ft.
Sanger Oil & Refining Co.'s No. 1 Gillespie, Sec. 7, Lunatic Asylum Land ... Drilling 3,545 ft.
World Oil Co.'s No. 1 J. R. Griffith ... Location.

TERRELL COUNTY

E. T. Williams and others' No. 1 Robertson, C NE Sec. 71, Blk. D-10, T. C. Sur. ... Shut down for casing 2,800 ft.; hole full of water.
Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M. K. T. Sur. (22 miles northeast of Sanderson) ... Location.

TERRY COUNTY

Kingsland Oil & Potash Co.'s No. 1 Brownsfield, C NW SW SW Sec. 7, Blk. 1-A, E. L. & R. R. Sur. ... Shut down 1,050 ft.

TOM GREEN COUNTY

Marland Oil Co.'s No. 1 ... Pulling tools 240 ft.

UPTON COUNTY

Beaty et al's No. 1 J. F. Lane ... Fishing tools 505 ft.
W. W. Donnelly and others' No. 1 University, C SW Sec. 21, Blk. 4, University ... Top salt 1,560 ft.; drilling 1,62 ft.
Gulf Prod. Co.'s No. 4 Hughes ... Flowed 57 bbls. 2,986-92 ft.
Gulf Production Co.'s No. 1 J. T. McElroy-B, C SW NE Sec. 187, Blk F. ... Total depth 710 ft.; underreaming 10-in.
Hults and others' No. 1 Giddings, C NW Sub. Sec. 12, Throckmorton Co. School Land ... Top salt 1,515 ft.; shut down 3,21 ft.; contract completed.
Humble O. & R. Co.'s No. 3 Ricker ... Top salt 725 ft.; drilling 750 ft.
Independent Oil & Gas Co.'s No. 6 Burleson ... Shut down 360 ft.
Independent Oil & Gas Co.'s No. 12 Wooley ... 1,500 ft. oil 2,047-2,168 ft.
Marland Oil Co.'s No. 3 Burleson, T. C. Jones Sur. No. 100 ... First pay 2,295 ft.; second pay 2,295 ft.; 2,000 ft. sulphur water 3,390-95 ft.; drilling 4,070 ft.
Marland Oil Co.'s No. 34 Burleson, Sec. 100, T. C. Jones Sur. ... Shut down 3,255 ft.
Marland Oil Co.'s No. 3 Benton Land, Julia Prater Sur. No. 1 ... Top salt 595 ft.; skid. rig; total depth 1,670 ft.
Marland Oil Co.'s No. 2 Gibbs ... Hole full oil 2,265-75 ft.
Sartain & Davis No. 1 Bull, SW NE Sec. 48, Blk. 41, T. & P. Sur. ... Rig burned 3,290 ft.; rebuilding.
Simms Oil Co.'s No. 2 Shirley ... Top salt 515 ft.; drilling 1,950 ft.
Skelly Oil Co.'s No. 1 Jones, C SW Sec. 32, Blk. 41, T. & P. Sur., 1-4-S ... Fishing casing 3,595 ft.
The Texas Company's No. 23 King ... Rigging up.

VAL VERDE COUNTY

A. Blume and others' No. 1 Moore estate, Sec. 183, J. Mitchell Sur. ... Shut down 3,000 ft.
Curso Williams' No. 1 Holman, NE NE Sec. 5, Blk. N, G. H. & S. A. Sur. ... Shut down 2,270 ft.
Douglas Oil Co.'s No. 1 Sellars, C SE Sec. 82, Blk. A, I. & G. N. Sur. ... Shut down 2,180 ft.
East Del Rio Oil Co.'s No. 1 Russell, E. cor. Sec. 183, Del Rio Town Sur. ... Shut down 3,142 ft.
Hiawatha Oil Co.'s No. 1 Sellars, C Sec. 1,031, Blk. A, I. & G. N. Sur. ... Shut down 2,455 ft.; hole full salt water.
Independent Operators' No. 1 Whitehead, SE SE Sec. 30, Blk. 4, I. & G. N. Sur. ... Shut down 3,750 ft.
O. O. Owens' No. 1 Mills ... Drilling 800 ft.
Transcontinental Oil Co.'s No. 1 W. S. Stevenson, NE SE NE Sec. 3, Blk. 4, I. & G. N. Sur. ... Shut down 3,972 ft.

WARD COUNTY

Marland Oil Co.'s No. 1 J. Sealey, C SE Sec. 78, Blk. A, G. M. M. & A. Sur. ... Drilling 735 ft.

WINKLER COUNTY

White Eagle O. & R. Co.'s (was Gibson & Johnson's) No. 1 R. A. Lock, 1,320 ft. west of NE cor. Sec. 30, Blk. 74, northwest of discovery well ... Location.
Gulf Prod. Co.'s No. 1 T. G. Hendricks, NW cor. Sec. 34, Blk. B-5, Pub. Sch. Ld. ... Top salt 1,665 ft.; show gas 2,553-58 ft.; drilling 2,591 ft.
Champlin Drilling Co.'s No. 1 C. W. Cowden C SW Sec. 21, Blk. C-23, Pub. Sch. Ld. ... Drilling 945 ft.
McCullough Oil Co.'s No. 1 Tobe Martin, CEL Sec. 20, Blk. B-12, Pub. Sch. Ld. ... Drilling 960 ft.
R. S. Matthews and others' No. 1 State, C Sec. 7, Blk. A-57, Pub. Sch. Ld. Sur. ... Fishing tools 1,225 ft.; will skid rig.
Independent Oil & Gas Co.'s No. 1 Hendricks, Sec. 42, Blk B-5, Pub. Sch. Ld. ... Drilling 1,100 ft.
F. P. Zoch and others' No. 1 John Sealy, C SW Sec. 73, Blk A, G. M. M. & A. Sur. ... Top salt 1,062 ft.; top lime 3,18 ft.; 150 ft. oil 3,216-17½ ft.; 2,800 ft. salt water 3,268 ft.; drilling 3,680 ft.
L. D. Ladd, Hill and others' No. 1 Amburgey, C Sec. 24, Blk. B-7, Pub. Sch. Ld. Sur. ... Top salt 1,220 ft.; drilling 3,210 ft.
Pure Oil Co.'s No. 1 Hendricks, SW cor. Sec. 41, Blk. B-5, Pub. Sch. Ld. ... Location.
Skelly Oil Co.'s No. 1 M. M. Leeman ... Drilling 350 ft.
Southern Crude Oil Purchasing Co.'s No. 1-C (was No. 2) Hendricks, NE cor. Sec. 33, Blk. B-5, Public School ... Rotary; top salt 1,910 ft.; set 8-in. 2,505 ft.; drilling out cement.
Southern Crude Oil Purchasing Co.'s No. 2-C (was No. 3) Hendricks, Sec. 33, Blk. B-5 ... Rotary rig.
Llano Oil Co.'s No. 1 Scarborough, center Sec. 1, Blk. C-22, Pub. Sch. Ld. ... Top salt 1,115 ft.; hole full water 1,321 ft.; drilling 1,411 ft.
Group 1 Humble O. & R. Co.'s No. 1 T. G. Hendricks ... Water well completed.
Humble O. & R. Co.'s No. 1 T. G. Hendricks, S and W NE cor. W ½ NE Sec. 33, Blk. B-5, Public School Land ... Location.

Spring rains won't stop Kelly Kat tires

When even the best roads are wet and slippery and bad roads are terrible, Kelly Kat tires keep right on going without loss of time. Kelly Kats are so made that they take hold of any road surface and carry the truck forward without danger of slipping or sliding on pavements or sticking in mud.

The tremendous ground-gripping power that Kelly Kats have is given to them by the correctly designed side vents. Kelly originated and perfected the side-vent construction and the present design is the result of many years of experience with this type of tire.

Truck owners in all kinds of work in all parts of the United States have learned from experience that Kelly Kats can be relied upon to keep their trucks working steadily in all kinds of weather on any kind of road.

Not only do Kelly Kats save money by cutting down delays, but they also economize for their owners by cutting down tire costs. This double economy makes truck operating much less expensive and much more likely to be profitable than when ordinary solid tires are used.

KELLY-SPRINGFIELD TIRE CO.
250 West 57th Street New York, N. Y.

Trucks that must travel in all sorts of weather regardless of road conditions can do their work more economically and quicker if they are equipped with Kelly Kats.

KELLY TRADE MARK REG. KATS
THE TIRES WITH NINE LIVES

Simplex Emergency Jack No. 310

No. 310—Capacity 15 tons
Single acting—automatic lowering

No. 310 is known as the Jack of a hundred uses. A standby in every oil field. Operates at any angle or vertically.

Built with drop forged steel working parts and furnished with five foot steel chain—steel auxiliary claw and steel level bar.

Unsurpassed for extricating stalled motor trucks—jacking steam engines—raising and setting boilers, raising sand reels and casing sills, skidding rigs and moving tanks and heavy machinery.

Templeton, Kenly & Co., Ltd.
Established 1899
Sole Manufacturers of the Simplex Jacks
Chicago, Ill., U.S.A.

Simplex Jacks are extensively imitated but they never have been equaled in man-power, simplicity, stability or safety.

At Your Supply House

TEXAS PANHANDLE

(Continued from Page 48)

130-quart shot from 2,1720-2,894 feet. Derby Oil Co.'s No. 5 Johnson, Section 20, Block Y, which was a 50-bbl. well, was increased to 1,200 bbls. by a 60-quart shot from 2,926-56 feet. Same company's No. 1 Johnson-A was plugged back from 2,887 to 2,881 feet and shot with 80 quarts from 2,840-81 feet. The following 24 hours it flowed 685 bbls. and increased to 940 bbls. the second day.

Midwest Exploration Co.'s No. 6 J. A. Whittenburg, Section 13, Block Y, flowed 805 bbls. the first 24 hours and 1,215 bbls. the second day following a shot of 170 quarts at 2,935-80 feet.

Phillips Petroleum Co.'s No. 3 G. A. Whittenburg, Section 62, Block 46, was good for 200 bbls. when shot with 300 quarts at 2,828-92 feet. Top of pay was 2,838 feet and total depth 2,925 feet. No. 2 Whittenburg-Byron in the Mary Whitley Survey, was flowing 10 bbls. an hour at 2,807-59 feet but was not completed.

Prairie Oil & Gas Co.'s No. 36 Johnson-A, Section 20, Block Y, Swabbed 95 bbls. from pay at 2,942-3,030 feet; No. 40 Johnson-A, flowed and swabbed 90 bbls. at 2,850-2,904 feet; No. 43 Johnson-A, Section 22, Block Y, flowed 380 bbls. the first 24 hours and 520 bbls. the second day from pay at 2,900-60 feet; No. 46 in Section 21 flowed 480 bbls. the first day and 1,500 bbls. the next 24-hour period from 2,895-2,943 feet; No. 47 Johnson-A in Section 21 made 280 bbls. initial, 20 per cent water, from 2,878-2,977 feet.

Pure Oil Co.'s No. 2 Johnson-B, Section 70, Block 46, was shot with 170 quarts at 2,828-2,915 feet and made 200 bbls. afterward. Skelly Oil Co.'s No. 6 Johnson, Section 20, Block Y, was completed for 50,000,000 feet of gas at 2,725-2,957 feet. The Texas Company's No. 1 T. D. Lewis, Section 5, Block 23, was completed for 85 bbls. after an 80-quart shot from 3,035 to 3,060 feet.

Wheeler County

Mid-Kansas Oil & Gas Co.'s No. 1 W. E. Curlee, Section 41, Block 24, flowed 415 bbls. the first 24 hours and 325 bbls. the second day from granite wash at 2,291-2,314 feet and was completed.

SHORT METHOD FOR DETERMINING LITHARGE

(Continued from Page 200)

indicator will remain spherical for a much longer time, and for the reason that the paper may be thrown away thus saving the time required to clean an extra piece of apparatus.

Quick Results

Where extreme accuracy is not desired the sample may be pipetted out with a 5 cc. pipette. We have found that 5 cc. of doctor ranging in gravity from 15 to 17 Baume will weigh from 5.42 to 5.50 grams. By using a pipette the time required for weighing the sample may thus be saved.

The time of calculation can be practically eliminated by determining a factor to multiply the cc. of ammonium molybdate used in a titration by, to give directly percentage of ligharge in case a certain sized sample is used or a chart based on the same thing in which cc. of ammonium molybdate solution, for a certain size sample is plotted against percentage of litharge.

We have been using this method for control work for the past year and find that an analysis for litharge content may be made in from 15 to 25 minutes, depending on whether the sample was weighed or pipetted out. The accuracy of the method is just as great as one cares to make it and the technique is not too difficult for the average untrained workman.

SHREVEPORT MARKET STRONG ON FUEL OIL

SHREVEPORT, La., Mar. 5.—Railroad buying in fuel oil made fuel oil the strongest product in the Shreveport refined market during the past week while gasoline tottered to a depressing price. However, gasoline was moving fairly good in the spot market during the latter part of the week as weather conditions brought about an increase in consumption locally. Rather than sacrifice gasoline at such low price a few refiners are storing their product.

Some manufacturers of natural gasoline are storing that product in the expectation of a tightening of that market. A few railroad fuel oil buyers were in the fuel oil market toward the close of the week and contracted for a few big orders.

While kerosene is reported weak in other areas it remained firm in the Shreveport territory. The gas oil situation remained unchanged.

DRILLING INCREASES IN FLUSH FIELDS

(Continued from Page 37)

	Gravity	Prod.	Posted Price	Total Value
Yeager	37	75	1.50	112.50
Yeager	38	440	1.53	673.20
Walters	27	62	1.20	74.40
Walters	28	310	1.23	381.30
Walters	29	260	1.26	327.60
Walters	30	85	1.29	109.65
Walters	31	45	1.32	59.40
Walters	32	20	1.35	27.00
All others	35	10,632	1.44	15,315.08
Total		704,000		$1,106,502.62
Average price (Okla.)				1.57
Average gravity (Okla.)				39.27

AVERAGE GRAVITY AND AVERAGE PRICE PER BARREL OF KANSAS CRUDE ON MARCH 5, 1927

	Gravity	Prod.	Posted Price	Total Value
Florence-Urschell	33	1,010	1.38	1,393.80
Covert-Sellers	32	830	1.35	1,120.50
Peabody	34	1,440	1.41	2,030.40
Elbing	34	2,545	1.41	3,588.45
N. Augusta	32	1,450	1.35	1,957.50
S. Augusta	32	1,580	1.32	2,085.60
Eldorado	35	7,025	1.44	10,116.00
Fox Bush	39	1,310	1.56	2,043.60
Towanda	33	2,510	1.38	3,463.80
Sluss	38	420	1.53	642.60
Leon Weaver	38	2,240	1.53	3,427.20
Smock	38	305	1.53	466.65
Nuttle-Koogler	33	2,150	1.38	2,967.00
Robinson	35	580	1.44	835.20
Wilson-Dunkle	35	1,575	1.44	2,268.00
Potwin	42	395	1.65	651.75
Phillips-Hazlett	42	90	1.65	148.50
East Butler	36	1,140	1.47	1,675.80
Douglass	32	130	1.32	171.60
Sallyards	38	1,410	1.53	2,157.30
Teeter-Pixley	42	13,970	1.65	23,050.50
Virgil	39	4,425	1.56	6,903.00
Seeley-Westcott	41	13,500	1.62	21,870.00
Burkett-Thrall	41	2,930	1.62	4,746.60
Paulhamus-Agard	40	1,575	1.59	2,504.25
Madison	40	3,390	1.59	5,390.10
Greenwood Co. (Misc.)	38	3,900	1.53	5,967.00
Oxford	38	1,200	1.53	1,836.00
Graham	38	940	1.53	1,438.20
Rainbow Bend	41	2,780	1.62	4,503.60
Winfield-New Salem	39	2,690	1.56	4,196.40
Eastman	39	735	1.56	1,146.60
Rock	39	295	1.56	460.20
Udall-Clark	39	255	1.56	397.80
Cowley Co. (Misc.)	40	380	1.59	604.20
Churchill	37	14,300	1.50	21,450.00
Elk Co. (W. ½)	34	2,000	1.41	2,820.00
Russell Co.	41	3,400	1.62	5,508.00
Rice Co.	37	950	1.50	1,425.00
Kingman Co.	28	20	1.23	24.60
Harvey Co.	24	25	1.23	30.75
Chautauqua Co.	32	2,450	1.35	3,307.50
Miscellaneous	28	10,150	1.23	12,484.50
Total		116,395		$175,275.45
Average price				1.5060
Average gravity				34.33

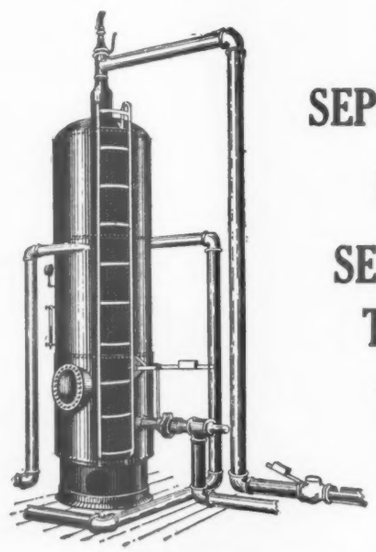
Late Fields

(Continued from Page 46)

ber Co. lands, off the new Stark Dome in Calcasieu Parish, Louisiana, 12 miles east of Orange, Tex., is flowing 3,200 bbls. through two one-half inch chokes. It is free from water. The Gulf Pipe Line Co. is pumping the oil to its main line station at Toomy, La., 4 miles east of Orange. Two 10,000-bbl. tanks and one 55,000-bbl. tank will be erected in the pool.

Arthur Mandell, superintendent of production for the Humphreys Corp. in the Coastal region, lost part of his left arm Friday while supervising some work in the Blue Ridge Pool. His coat sleeve caught in a cat line, dragging the arm and crushing it so badly that amputation was necessary below the elbow. Mr. Mandell is a native of Titusville, Pa., and is well known in the Oklahoma and Texas oil fields. He is in a Houston hospital.

The TRUMBLE



IS A SEPARATOR NOT A SETTLING TANK!

Write us for full information.

TRUMBLE GAS TRAP COMPANY
801 Higgins Bldg., Los Angeles, Calif.

Eastern Representative: C. F. CAMP
221-23 E. Archer Tulsa, Oklahoma

For Economy and Results

Use

ETNA

WELDED STEEL TUBULAR PRODUCTS

DISTRIBUTORS

Bovaird Supply Company	Tulsa, Okla.
Southwest Supply Company	Bartlesville, Okla.
Superior Tube Company	Tulsa, Okla.
Atlas Supply Company	Muskogee, Okla.
Hercules Supply Company	Dallas, Texas
Keystone Pipe & Supply Company	Butler, Pa.
McEwen Bros.	Wellsville, N. Y.
Thos. H. Pike Company	Los Angeles, Cal.

Sizes 1/8" to 24" O. D.

SPANG, CHALFANT & CO., INC.

GENERAL OFFICES, UNION BANK BUILDING

PITTSBURGH, PA.

Branch Offices:

PITTSBURGH, PA — CHICAGO, ILL. — NEW YORK, N. Y. — ST. LOUIS, MO.

Mills:

ETNA, PA. — SHARPSBURG, PA.

Bureau of Mines and Oil Refining

Varied Line of Work Carried On Covering Manufacturing Methods, Specifications, Statistics and Economic Studies

By A. J. Kraemer*
Associate Petroleum Chemist, Bureau of Mines

The problems that have been studied by the Petroleum Division of the Bureau of Mines are so varied in nature, and cover the whole range of production and refining in such detail that it is impossible, in this article, to do more than merely mention some of the more important ones. Some idea of the scope and volume of this work may be gained from the statement that since 1911, the Bureau of Miles has published 45 bulletins, 70 technical papers, 22 engineering reports, 79 reports of investigations and 7 information circulars, besides a number of miscellaneous publications that deal with various aspects of the petroleum and natural gas industries.

Crude Petroleum

Under this head are included the analyses of typical crudes, and investigations of problems that arise in the handling and utilization of crude petroleum. The first publication on crude petroleum was Bulletin 19, "Physical and Chemical Properties of the Petroleums of the San Joaquin Valley, California," by I. C. Allen and W. A. Jacobs, (1911.) This bulletin was in great demand and has been out of print for more than 10 years. This paper was followed by others dealing with properties of crude petroleums, methods for continuous distillation, analytical distillation and treatment of emulsions.

A fact that soon became evident in the analyzing of crude petroleums, was the necessity of adopting an analytical procedure that would furnish a fundamentally reproducible basis for the comparison of individual crude petroleums. The methods that were worked out for this purpose are reported in Bulletin 207, "The Analytical Distillation of Petroleum and Its Products," by E. W. Dean, H. H. Hill, N. A. C. Smith and W. A. Jacobs. The procedures outlined there have been slightly modified as experience has suggested changes, but the basic plan has been followed in all of the crude oil surveys that have been published by the bureau.

The crude oil surveys, issued as mimeographed reports of investigations, have covered virtually every field of the United States, and the bureau has endeavored so far as its resources would permit, to report on important new fields soon after they are brought in. Surveys have also been made of oil fields of other countries and Technical Paper 346 covered typical crude oils of the Western Hemisphere. A report on crude oils of the Eastern Hemisphere is now in course of publication.

Natural Gas

One of the early activities of the bureau was a study of natural gas with respect to its efficient utilization, the hazards connected with its use, and the production of natural gas gasoline. A number of publications dealing with natural gas have been issued and the study is being continued, with the co-operation of the Natural Gas Association of America.

Gasoline

At an early date in its history, the bureau interested itself in gasoline. The earliest studies had to do with comparisons of gasoline and alcohol as fuels for internal combustion engines (1911, 1912.) Later, when it became evident that there was considerable variation in gasolines sold throughout the country, the bureau undertook an investigation, the results of which were reported in Technical Paper 163, "Physical and Chemical Properties of Gasoline Sold Throughout the United States During the Calendar Year 1915," by W. F. Rittman, W. A. Jacobs, and E. W. Dean. This was followed by more extensive surveys in April, 1917, and April, 1919, and these have been continued to the present, in the form of semiannual gasoline surveys. The report on the fifteenth semiannual survey will soon be issued.

Refinery Statistics

During the World War it seemed that a shortage of gasoline and other petroleum products was inevitable, and the lack of adequate data in regard to the number, capacity and locations of refineries in the United States made difficult the obtaining of an estimate of the productive capacity. The Bureau of Mines accordingly undertook a survey of the refineries and refining capacity of the United States during the year 1917, and the information obtained was found to be of such value that refinery statistics have been collected annually since that year. The recent statistics are much more complete than the figures obtained in 1917, and this is in large part due to the co-operation of refiners in supplying the information. Petroleum refining statistics are issued monthly and are distributed free of charge.

The economic factors that govern the developments within the petroleum industry are matters of vital interest to the petroleum refiner, and to the entire industry. Yet the individual refiner has not had the opportunity nor the facilities to conduct investigations that would enlighten him in regard to the economic situation, or would indicate the trend of the industry in the future.

Such information does not necessarily lose its value to the individual when it becomes common property. Complete knowledge of the economic status of an industry would be extremely valuable to an individual if he alone knew what the situation was. However, widespread knowledge of economic circumstances should act to prevent mistakes of curtailment or overproduction; mistakes that are costly to the industry as a whole, and inevitably to the individuals within the industry as well as to the general public.

It has, therefore, seemed desirable for the Bureau of Mines to undertake studies of these conditions. The first step was taken in a study of the California petroleum industry, which was reported as a "Statistical Summary of the California Petroleum Industry for the Year 1925," by J. W. Mashaw and E. B. Swanson. An economic study of the petroleum industry in the remainder of the country is now being conducted by the Bureau of Mines with the co-operation of the American Petroleum Institute.

Early in its history the bureau became interested in specifications for petroleum products. The first publication on the subject was Technical Paper 3, "Specifications for the Purchase of Fuel Oil for the Government, With Directions for Sampling Oil and Natural Gas," by I. C. Allen (1911.) Other papers dealing with the determination of water content, sulphur content, flash point, etc., soon appeared. The bureau has always maintained an interest in specifications and has issued a number of reports on that subject.

The lack of uniformity of specifications and methods for testing that was disclosed through the earlier gasoline surveys mentioned above, led the bureau to investigate the subject. A number of papers were published, dealing with properties, laboratory methods for testing and practical specifications for gasoline.

Later, when conditions brought about by the World War made desirable a general agreement in regard to proper specifications for other petroleum products as well as for gasoline, the Bureau of Mines aided in this development, and has been active in the work of the Technical Committee on Lubrication and Liquid Fuels of the Federal Specifications Board. This committee is charged with the duty of recommending specifications for lubricants and liquid fuels for use by all Government departments.

It aims to recommend specifications that are entirely practical in that they will insure a good grade of products for the Government departments without necessitating special treatment in the preparation of the products in the refineries. The present specifications for lubricants and liquid fuels are published as Bureau of Mines Technical Paper 323-A, "United States Government Specifications for Lubricants and Liquid Fuels and Methods for Testing."

Evaporation Losses

Loss by evaporation is practically inescapable in handling a product such as crude petroleum or any of its lighter distillates. However, the practicability of reducing evaporation losses has not always been conceded and in fact inquiries made at the beginning of the study showed that many people considered evaporation losses to be negligible.

The work done by Bureau of Mines engineers probably had a considerable effect in demonstrating that evaporation losses were large, and could be materially reduced. Since the appearance of Bulletin 200, "Evaporation Losses of Petroleum in the Mid-Continent Field," by J. H. Wiggins, a number of devices have been made available to refiners by tank manufacturers and others, for the purpose of reducing evaporation losses of petroleum and its products, in transit and in storage. A number of other publications dealing with various aspects of the evaporation problem have followed Bulletin 200.

Hazard's and Safety Precautions

The promotion of safety in the mineral industries including the oil and gas industry is one of the fundamental duties of the Bureau of Mines. One of the earliest papers on this subject was Technical Paper 79, "Electric Lights for Use About Oil and Gas Wells," by H. H. Clark. The work of Burrell and his coworkers on the limits of inflammability of mixtures of combustible vapors and air, and his work on hazards in handling gasoline, soon became well known. More recently the bureau's work in promoting safety has included the collection and study of accident statistics, study of safe practices about drilling wells and investigations of health hazards due to poisonous gases. Another project is the training of oil field workers and refinery workers in first aid methods. This work has had the full co-operation of the oil companies. Investigations along these lines have been carried out and results reported in technical papers and reports of investigations.

Refinery Studies

For a number of years the Petroleum Division has been interested in the technologic problems of the oil refiner. Bulletin 162, "Removal of the Lighter Hydrocarbons from Petroleum by Continuous Distillation," by J. M. Wadsworth (1919) contained detailed descriptions with drawings and photographs of the principal topping plants of California. This bulletin probably had a considerable influence in the spread and development of continuous distillation throughout the country, as it called general attention to California practice in this respect.

A general study of the application of theories of fractional distillation to the design of fractionating equipment, was undertaken, and a report on the results of this work is now in course of publication.

The attention of the bureau's engineers was attracted to the problem involved in the separation and purification of paraffin wax from petroleum distillates. Technical Paper 368, "Paraffin Wax and Its Properties," by L. D. Wyant and L. G. Marsh reported results of laboratory work which was required to establish control methods for the technologic processes operated on a semicommercial scale. Work on this problem has been suspended temporarily but the bureau hopes to take it up again in the future.

Methods of treating crude naphtha and other light petroleum distillates have undergone extensive and fundamental changes during the past several years. The Bureau of Mines was attracted to this study by the apparent lack of systematic and fundamental knowledge of the factors involved in the treatment of light distillates. A report of the results of this investigation is being prepared.

Miscellaneous

In addition to the above, the bureau has engaged in a number of collateral activities, as the need for them has arisen. The war time activities of the Bureau of Mines were reported in Bulletin 178, "War Work of the Bureau of Mines" by Van H. Manning.

The annual bibliographies on petroleum and its products which the bureau has issued beginning with the year 1915, have been in great demand. These biblio-

PRACTICAL VALUE OF BUREAU OF MINES

Can the Bureau of Mines help me in solving my problems? Many plant operators have occasion to ask this question in connection with operating difficulties which constantly arise in the operation of their plants. With the view of making known the scope of the government bureau's activities the accompanying article was prepared especially for The Oil and Gas Journal.

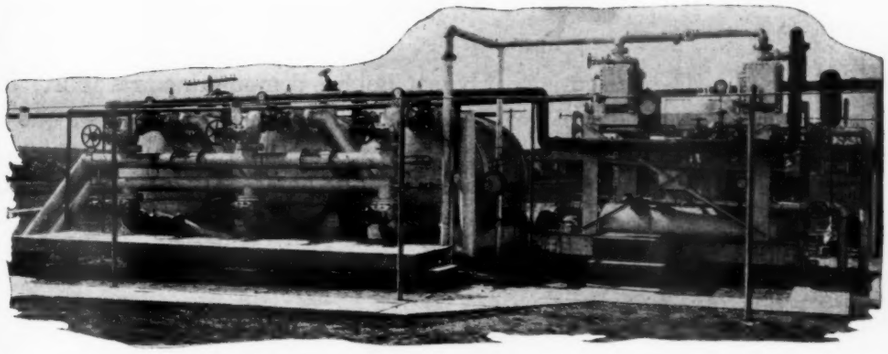
The article describes the activities of the bureau that are of particular interest to the refiner. These studies classified are as follows:

(1) Crude petroleum, properties and utilization,
(2) Natural gas, properties and utilization, including natural gas gasoline,
(3) Gasoline, properties, specifications, and methods for testing,
(4) Refinery statistics and economic studies,
(5) Specifications, and methods for sampling and testing,
(6) Evaporation losses, and methods for prevention,
(7) Hazards and safety precautions,
(8) Refinery studies,
(9) Miscellaneous.

*Published by permission of the Director, Bureau of Mines, Department of Commerce.

CHAR process

—Of Gasoline Recovery—



Charcoal Process Plants are now operating at pressures varying from

3 lbs. to 350 lbs.

No other process can work economically and efficiently over this range of pressures.

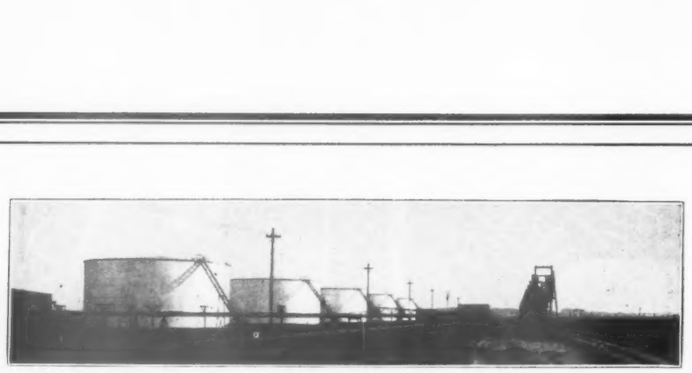
GASOLINE RECOVERY CORPORATION

Charleston, W. Va.

TULSA
423 Wright Bldg.

LONG BEACH
Box 321

COAL



Around the World With Silvr-Cool

Silvr-Cool is known throughout the world as the Super Aluminum Paint.

The reason is that Silvr-Cool has demonstrated its ability to stand up year after year, under unusual conditions of exposure.

Silvr-Cool is the best known Aluminum Paint. Silvr-Cool is used by the largest consumers of Aluminum Paint in the United States. Its use is world wide and its worth has been proven in

Argentine	Cuba	Japan	Sumatra
Australia	Curacoa, B. W. I.	Mexico	Trinidad
Borneo	Colombia	Morocco	Uruguay
Brazil	Chile	New Zealand	Venezuela
Burma	Egypt	Peru	Portuguese E. Africa
Canada	England	Porto Rico	United South Africa
China	Formosa	Roumania	

In practically every country where oil is produced and stored, Silvr-Cool is known as the Aluminum Paint that costs less per year.

Silvr-Cool is always ready for use

SILVR-COOL

The Super-Aluminum Paint

—IS MADE BY—

Detroit Graphite Company

DETROIT, U.S.A.

Manufactured in Canada by Dominion Paint Works, Limited, Walkerville, Ontario. *Offices* at all principal centers.

graphies give a complete classified list of publications on all aspects of petroleum.

For a number of years the Bureau of Mines has made laboratory studies in co-operation with the states of Utah, Colorado and Indiana of various oil shales throughout the country. In this way, considerable information was gained in regard to the factors influencing the yield and quality of shale oil produced by various methods of retorting. The physical and chemical properties of oil shale and shale oil were also investigated. Bulletin 210, "Oil Shale," by M. J. Gavin, reported the results of this work up to 1923, and subsequent reports have been made in bulletins, technical papers and reports of investigations. Recently the bureau has built and is operating an experimental retorting plant at Rulison, Colo., using single units of commercial size retorts.

The question of the nature and properties of the sulphur compounds in petroleum is one of great importance to the refiner as well as the user of petroleum products. Although a great deal of work has been done, complete knowledge of this subject is still far from being realized. Preliminary to the attack of this problem it became necessary to devise laboratory methods by which crude petroleum could be fractionated with a minimum of change in chemical constitution. A paper by H. M. Smith, presented at the meeting of the American Chemical Society at Tulsa, Okla., in April, 1926, described a method by which Salt Creek, Wyo., crude was fractionated at atmospheric pressure and below the temperature of boiling water, with the production of a residue having an initial boiling point of 455 degrees Fahrenheit. Another paper, which will report progress in this work on sulphur compounds, is in course of preparation for presentation at the meeting of the American Chemical Society in April, 1927.

For some time the Bureau of Mines has been engaged in engine tests of lubricating oils at the San Francisco office of the bureau. This investigation was started under a co-operative agreement with the American Petroleum Institute and some California refiners. For this work a well-equipped engine dynamometer laboratory and an oil inspection laboratory were installed. The work to be done under the co-operative agreement has been completed and the report of results will probably be issued in the near future. The title of this report is Technical Paper 387, "Engine Service Tests of Internal Combustion Engine Lubricating Oil Made From California Crude Petroleum," by Martin J. Gavin and Gustav Wade.

Since the termination of the co-operative agreement, the Bureau of Mines has decided to conduct a similar investigation applied to lubricating oils from the point of view of their chemical characteristics and methods of manufacture. This investigation is still in progress.

PERSONAL SKETCH OF JOHN D. ROCKEFELLER

(Continued from Page 80)

of his struggle, he was completely bashed, physically and nervously.

Just one avenue of salvation opened before him: He had to face about sharply, give up the things that spelled chief interest for him and create a new spiritual, mental, physical outlook. He succeeded; and life to him now is a renaissance, almost a rhapsody.

A Renascent Rockefeller

Apparently, the renascent Rockefeller is completely contented. He leads a perfectly balanced life. He sleeps eight undisturbed hours each night and for a few moments at short intervals during the day. He eats sparingly, but without restriction, of any dish he wishes with the exception of the few (sweets, tomatoes, cucumbers) which experience has taught him do not agree with him.

He enjoys organ recitals, band concerts and vocal renditions of old hymns and favorite songs of his boyhood. He reads with absorption three books and certain selected private reports, and glances over two newspapers daily.

He is an addict and something of an expert in two games of skill and chance —golf and a mathematical building game called Numerica.

He talks fascinatingly, but with no soaring of the imagination, of the days that are gone, and keeps in very, very close touch with events in Wall Street that are likely to affect his holdings.

He is the "Grandfather Confessor" to his children and grandchildren and likes to have them around him.

He watches his health as you watch the counters on your thermometer in zero weather. But he has dispensed with a personal physician, and never displays the slightest outward concern about his physical condition.

His Typical Day

Let's describe a typical day in his life. The setting is his great 6,000-acre estate, Pocantico Hills. There are three other homes—in New York City, Lakewood, N. J., and Ormond Beach, Fla. But Mr. Rockefeller spends as much time in his peak-roofed mansion overlooking the Hudson as he does in the other houses combined. The other homes are completely staffed and always awaiting their master, but Pocantico holds his deepest affection. There are many reasons for this. More about them later.

It is, then, 7 a. m. of a late fall morning at Pocantico. The master's suite is on the third floor. It faces the northwest with a marvelous view of the Hudson. John, Mr. Rockefeller's valet, enters and softly draws back the curtains. John has served him for eight years. John's predecessor went away to the war and did not return.

Mr. Rockefeller is already stirring. He rises without effort and goes into his great bathroom with its weighing machine, needle showers and tub that is almost as large as a plunge. At 7:30 his morning ablutions are over and, with the valet's assistance, he dons a sack suit. John I. for years has been fussy about his wearing apparel. He owns as extensive a wardrobe as any society dandy and has very distinctive ideas about clothing and colors.

At 8, promptly, Mr. Rockefeller steps into the electric elevator and descends to the first floor. The dining room faces east and north, catching the morning sun, and looks out upon the Circular Garden, in the center of which is a rich marble fountain, patterned after one by Donatello, in the Palazzo Pitti at Florence. From the dining table, one catches a glimpse of this fountain through a lane of cypress trees.

Breakfast Guests

Awaiting him in the hallway are Mrs. Fannie Evans, a cousin who took up the duties of housekeeper after the death of Mrs. Rockefeller in 1915. Also (probably) several house guests. The guests, as a rule, are relatives, officials of the great Rockefeller charity organizations, or ministers. There is usually at least one divine in the house.

Mr. Rockefeller greets the company cheerfully and leads the way in to breakfast. He sits at the table overlooking the Circular Garden (it is really stirrup-shaped) and says grace. The meal consumes an hour. The bent little man at the head of the table eats practically nothing but "samples" a tiny amount of everything. A drop of coffee, a spoonful of cereal, a forkful of egg, a bit of chop the size of a pea. He eats very slowly, seeming actually to chew his liquids as well as solids. The total amount of food he consumes in one day would probably equal in bulk not more than two or three medium-sized sandwiches.

When the other diners have eaten all they wish, John D. motions to the butler. The latter leaves the room and in a moment a pleasant looking gentleman appears bearing three books. This is John D.'s secretary, Davis. The books are the Bible; a compendium of poems and prayers, containing an "uplift" message for each day; and a volume of the collected sermons by the Reverend Doctor Jowett.

Short selections are read from each of the three volumes. The reading is gen-

Petrol Belt / Petrol Belt Clamp / Petrol Rotary Belt Punch for BEST OIL FIELD BELT SERVICE

In the Mid-Continent Fields at all branches and stores of WILLIAMSPORT WIRE ROPE CO.

In California at CHRISTIE-FREY COMPANY Los Angeles, Cal.

In the Eastern Fields at JARECKI MFG. CO.

"Petrol Belting & Petrol Clamps Make the Ideal Combination"

Manufacturers

Victor Balata and Textile Belting Co.

Main Sales Office: 38 Murray St., New York City

Factories: Easton, Pa.

There Are BURT OIL FILTERS AND OIL RESERVOIRS

To meet the needs of every Refiner

Built with the experience of over 36 years.

The Burt Double Unit

Write for the Complete Burt Catalog.

Pioneer Oil Filter Manufacturers

The Burt Manufacturing Company

929 S. High St., Akron, Ohio

ASCO STEEL
STANDS SUPREME

Our metallurgists are men who have had first hand experience in the Oil Fields. They have studied the performance of Oil Well Tools under the most trying conditions. Asco Steel is being produced to meet these conditions and the increasing demand has proven all that we claimed for it.

DISTRICT OFFICES
502 Cosden Bldg., Tulsa, Okla.
61 Fremont St., San Francisco, Calif.
724 Kohler St., Los Angeles, California

THE ANDREWS STEEL CO.
NEWPORT KENTUCKY

KANOTEX
—an Ideal Realized

To maintain a jobber and dealer organization year after year—with practically no turn-over in accounts.

To maintain a steady, conservative growth; not through so-called "high-pressure" sales and advertising methods, but by letting the superior merits of our products speak for themselves. New jobbers and dealers, attracted in this way, become permanent members of the Kanotex Family—selling Kanotex Products because they KNOW these products offer the consumer at all times, the best the market affords.

Thus—the ideal which has been our aim—has been realized.

We invite inquiries from distributors who are looking for a better line of petroleum products; whose principal aim is to give their trade nothing but the best.

The Kanotex Refining Co.
Phone L. D. No. 4 **Arkansas City, Kansas**

erally done by Secretary Davis or a guest. John D. focuses his entire attention upon these daily lessons and sometimes has a passage repeated. Then he retires to his study for the first of his five daily rest periods. These come after each meal and following golf and motoring. He has so schooled himself that he is able to will himself to sleep for 5 or 10 minutes if he feels the need of such refreshment.

Then Mr. Rockefeller is ready for his morning paper. He reads or has read to him the New York Times in the morning, later the New York Evening Post. He follows world events in which he is interested with great care. But the papers really tell him very little. He himself could publish the most interesting newspaper in the world! And each day he'd have a flock of beats.

For while the papers are speculating upon the health of a great diplomat or the probable overthrow of a foreign government, he has already been informed of latest developments through direct wire lines leading from Pocantico Hills to Standard Oil offices and, indirectly, to the remote places of the earth. There are over 100 telephones at Pocantico, 40 of them private local, suburban and long distance lines.

Mr. Rockefeller does not use them much, but he is interested in market quotations and he likes to receive an advance digest of anything big that is going on in the world. He has never lost interest in finance. On the day I am describing he was very keenly interested in various deals of the Standard Oil Co. of New Jersey. Through representatives, he advised the transaction by which the New Jersey Standard cut its capital cost by retiring $200,000,000 of preferred stock and floating a new issue of $120,000,000 in debenture bonds.

His information about matters that interest him is invariably accurate. For instance, I have no doubt he knew several days before Queen Marie was called back to Rumania that such a summons was imminent because of the precarious condition of King Ferdinand's health. Why? Well, Rumania is an oil country and Standard's agents there are alert.

Ready for Golf

An hour after breakfast, Mr. Rockefeller goes to his rooms and dons golf togs. He generally wears an old cap, with side flaps; one or two sweaters (depending upon the weather), rough, long trousers; dark golf shoes. He always wears gloves.

At Pocantico Hills, he walks out of a basement door, through the Golf Garden (so called because it's next a lawn upon which he practices) and to the first tee. He plays either 8 or 10 holes at Pocantico because the eighth and tenth greens are nearer the house than the ninth; he plays nine holes at Lakewood; and only eight at Ormond, because there the eighth is at the roadside and his car can more readily pick him up.

Physically, golf is the biggest thing in John D.'s life. He is not a star player but he is by no means a dub. He has made a study of the game, understands its principles perfectly, and comes as close to being a golf bug as anyone. Over a stretch of several weeks this fall, he averaged 48 for 9 holes. Don't let anybody tell you that's bad golf for a man of 87 who weighs less than 100 pounds. The Rockefeller's bag contains more clubs than that of the average golfer. He has two drivers and two brassies of different weights. The brassie is his favorite club. He uses it frequently when others counsel an iron. His principle is: "Always use the heavier club."

In his tee shots he develops medium trajectory. In approaching he knows how to run 'em up as well as pitch 'em on to the green. He always goes straight for the flag, as golfers say, not content merely to dribble on to the green. He has a big, rake-like putter and sweeps the ball into the hole. I saw him take four putts once but he seldom requires more than two.

His game varies between 45 and 55 for 9 holes. He has gotten many "birdies" (one stroke under par) but no "eagles" (two under par) during his golfing career. He realizes his limitations, knows he can never hope to drive better than a good woman's ball, and never tries to press.

The prettiest attribute of his game is its direction. He loses not more than three balls a year. And he can tell exactly under what circumstances they were lost and whether the fault was his or his caddy's. A house guest at Pocantico phoned me recently and ruefully announced:

"I just played a round with Mr. Rockefeller. I am a total loss! He beat me up in 10 holes. I drove six balls into the woods. He was right on a trolley wire all the way!"

John D.'s grip and stance are not perfect. He holds his right thumb straight down the shaft of his club. His left toe is a bit too near the line of flight. But he gets results.

His life-long habits of economy are evident even in his golf. He wastes no energy in a preliminary swing and refuses to waggle his club back and forth while addressing the ball. In fact he doesn't waggle at all. Just steps up and socks, for good or evil. Every two or three holes he pulls a piece of chalk out of his pocket and liberally smears the face of his driver.

"Helps to hold the ball," he explains. "Also it lets me know whether I am succeeding in hitting the ball where I want to—just below center."

His swing is a good, rounded, three-quarter affair, remarkable in a man of his age. When he connects fairly the pill is off on a 150-yard ride. His favorite ball is one noted for its resiliency, the Silver King. Like most golfers, John D. displays exultation when he has gotten off a good shot. When members of his foursome applaud him, he generally replies with a grin: "Oh, good enough for me."

Sometimes, when he soaks one square down the middle, he does a funny little half-Charleston, bending his left knee and shuffling to time. At such times he is likely to remark to any girl in the group: "You ought to kiss my hand for that." He is very fond of playing golf with young women and is very approachable.

His steady golf pals are Mrs. Ira Warner, of Bridgeport, Conn., and Gen. Adelbert Ames. Mrs. Warner, widow of a sugar magnate, is his closest woman friend and a frequent guest at Pocantico and Ormond. General Ames lives at Ormond on the opposite bank of the Halifax River. The General is 90 and it's nip and tuck between John D. and himself. Ames likes to play 18 holes a day and always twits Rockefeller when the latter quits on the eighth green.

Last spring at Ormond, Rockefeller's caddy was a bright little pickaninny named Harmon. One day the Oil King drew Harmon aside and said: "My boy, let me give you some advice. Don't buy anything you can do without. Save your money. Be punctual. Form good habits."

The little darky's eyes saucered.

"Yassah," he gulped, "yassah, ah certa'nly follows what yo' says, sah."

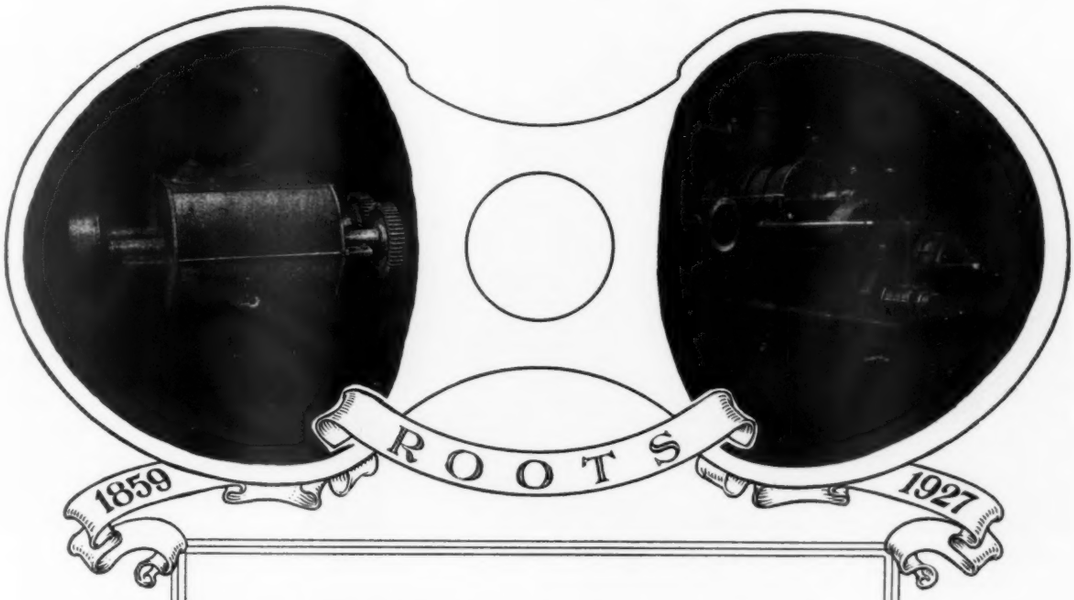
Luncheon and After

John D. returns from his golf game by noon. He changes back into a business suit, rests for a few minutes, handles whatever matter of business has been brought to his attention, and is ready for luncheon at 1:30. This is his "heaviest" meal of the day. He is likely to consume two or three spoonfuls of a favorite soup, dip into several vegetables, and nibble at a small leaf of lettuce with a few drops of olive oil. He holds to the belief that olive oil is a good ungent for the aged. He may top off the meal with a bit of cheese. Again, he spends an hour over a meal the average person would down in three gulps.

"I never leave the table right after a meal," he says, "always sit for a time. It is not good for the digestion to hurry. I have disciplined myself to eat sparingly and find it pays."

After luncheon, John D. again rests for a few minutes. Then he attends to matters connected with the management of the estate (and he overlooks not even

First *THEN*—Foremost *NOW*



SIXTY-EIGHT years ago, the first Roots unit was built. It was the first successful rotary blower of the positive displacement type, and the principle, demonstrated by the Roots brothers in their first blower, has stood the test over two-thirds of a century in highly competitive fields.

This principle remains today, substantially the same as when first discovered, but its application has been extended to all industries that pump or measure air, gases or liquids.

Roots equipment is simple, efficient and sturdy. Its use in all kinds of industries in all parts of the world speaks for the satisfaction that Roots equipment insures.

There is a Roots installation near you that has been in operation for from five to forty years—perhaps longer—we'll let its performance be its own recommendation of the service that may be derived from Roots equipment.

ROOTS The P. H. & F. M. ROOTS CO. ROOTS

CHICAGO
Peoples Gas Building

CONNERSVILLE, INDIANA

NEW YORK
120 Liberty Street

Two 1500 Gallon Columbian Truck Tanks with selective, fire-safe emergency valves, at downtown depot Julian Petroleum Corporation, Los Angeles. Note the fine balance of these outfits.

TRUCK TANKS
with integral mounting, pipe lines and bucket box.

Welded Storage Tanks
Bolted Storage Tanks
Welded Gauge Tanks
Welded Underground Tanks

Safety Floating Tank Decks

All-steel Buildings

Pumps
Loading Racks
Pipe and Fittings
Valves and Faucets
Hose

Barrels and Drums

Buckets and Funnels
Carrying Cans
Stands for Road Signs

Complete Bulk Station Equipment

The Columbian line of oil equipment comprises practically all of the major items required in outfitting up-to-date bulk oil handling stations or depots.

Almost since oil has been handled in quantities larger than barrels, thousands of bulk stations have been built up around Columbian Welded Storage Tanks.

Many thousands of Columbian Truck Tanks have transported the contents of these to many more thousands of Columbian Underground Tanks.

As a matter of fact, from oil fields to motor cars, millions of gallons of oil travel from one Columbian Tank to another and in another daily.

There are Columbian tanks for storage; tanks for blending; tanks for measuring and truck tanks for transporting. There are pumps, pipe, fittings, valves, faucets and loading racks for transferring. There are barrels, drums, carrying cans, buckets, funnels, master measures, pumps and hose for dispensing. And there are all-steel, permanent-portable buildings for housing bulk station and filling station operations.

With Columbian Floating Tank Decks bulk station storage is made fire-safe and evaporation is cut to the minimum.

Stringent fire and strength tests have demonstrated Columbian Truck Tanks absolutely fire-safe and capable of withstanding collision of the severest nature. The tank, its partition mounting, its pipe lines and bucket box are welded into one integral unit of steel freed of twisting strains by its flexible 3-point support mounting.

From One Source of Supply

One source of supply for all of this—and reliable. One with a third of a century of noteworthy achievement as its background and with an enviable record to maintain. Let the resourceful staff of Columbian Engineers aid you in outfitting your bulk stations from stem to stern. The savings, in time and money, to be effected at the one complete source of supply, are surprising.

COLUMBIAN STEEL TANK COMPANY

EST'D 1894 TANKS FOR THE WORLD

1405-1625 WEST 12TH STREET KANSAS CITY, MISSOURI

the smallest item); talks perhaps with his son or a representative in New York; glances over memoranda or reports of his outside affairs—reports considered important enough for his attention; and at 3:30 sharp goes motoring.

Often he motors for two hours, His chauffeur, Phillips, drives either a Simplex or a Lincoln. The Oil King likes to cover ground. Thirty-five miles an hour is the minimum speed he prefers. Over the great boulevards traversing the Florida Peninsula, he travels at a faster clip.

John D. likes scenery, but he is not a born nature lover. Though a country boy, he never wandered about the woods nutting, stealing birds' eggs, hunting woodchucks. He knows something about flowers and trees, but even to this day catches himself thinking of them in terms of possible usefulness; honey, paper pulp, maple sugar.

John D.'s fondness for fast traveling is a trait apparently handed down to his pet granddaughter, Abby Rockefeller Milton. In fact, I am not at all certain Abby's former occasional tangles with the traffic police were not due to an inherited taste for "getting there quickly." Both Abby and John D. have a positive aversion for 'slow-poking through life." The oldest child of the Rockefeller Juniors surely does not inherit a thirst for speed from her father, John D., Jr., who still prefers a horse-drawn vehicle to a motor, and whose garage holds but three cars, none of them expensive, and two showing signs of longevity.

Speedy Motoring

But Babs Milton's grandfather, with whom she is a favorite, delights in moving as fast as the law and the elements of safety permit. Invariably he times his trips to town and often when he steps into the big closed car at Pocantico, he roguishly addresses his chauffeur, watch in hand:

"Phillips, we got to town Monday in one hour and seventeen minutes. Let's see what we can do today."

Phillips' grinning response, as he touches his cap, indicates thorough knowledge that his distinguished boss wants him to choose sparsely trafficked roads. Phillips and the other Rockefeller chauffeurs are careful, mature men picked for their expertness in handling cars. But, occasionally, even they fail to realize that their powerful, perfectly mechanized engines are pushing them above the limits of speed permitted even in the open country.

When the speeding proclivities of Babs Rockefeller got her into a police court mixup a couple of years ago, "Grandpop" was the first to comfort her. He wrote an encouraging little note. And when she visited him next he told her, with many a chuckle, how one of his chauffeurs, not so long before, had "barricaded" himself in the ample Pocantico Hills garage to avoid a summons.

A new and zealous young motorcycle cop had timed the Rockefeller car, in which the Potentate of Pocantico was the only passenger, and had trailed it back to the very gates of the estate.

"The officer wanted to arrest everybody on the place," chuckled Grandpop. "He only calmed down when he learned we were first offenders and unwitting offenders. Then he pardoned us. But the chauffeur was locked in the garage!"

Babs Rockefeller travels fast for excitement. Her grandfather likes fast motion for efficiency's sake. During his long and crowded life he has watched the growth of transportation from farm wagon to racing airplanes. His theory, from the time he purchased his first fast trotter, has been:

"The sooner I can arrive at a given destination, the sooner I can accomplish the purpose that led me there."

Shortly before her marriage to young David Milton, Babs was aided by her grandfather in persuading her father, Rockefeller, Jr., to lift his hitherto stern ban against her motoring. The young Miltons promptly purchased an $8,000 car out of their combined personal income of $23,000 a year. The motor was a powerful streamline American-made machine of battleship gray.

John D. knew of the couple's ambition to take the car abroad with them on their honeymoon, knew also the young people's pockets were not lined with gold. So, at the conclusion of the wedding ceremony, in May, 1925, (during the recital of the Lord's Prayer, the Oil King had wept, unashamed), Grandpop drew Abby to one side and pressed a bit of paper into her moist hand.

That evening, after the wedding fans had been succesfully eluded, several chums joined the Miltons in a hotel apartment for a wedding supper. Babs described some of the wedding presents, then exclaimed:

"But only one person was thoughtful enough to give us a check—Grandfather. What an understanding old dear! He knew we were broke and he knew I am just dying to buy one of those beautiful French cars that do a mile in less than nothing! Grandfather has promised to ride with me when we get back."

John D.'s check was large enough not only to purchase the beautiful car of Bab's dreams but also to finance the honeymoon trip.

Motoring consumes, as a rule, two hours of John D.'s afternoon. Then comes the usual 10-minute rest, a brief session with his secretary, another talk or two over the phone with his son or a representative, and he is ready to dress for dinner. Mr. Rockefeller always wears formal dinner clothes, a habit of years, whether he is dining alone with Mrs. Evans or whether there are a dozen guests.

Dinner is served promptly at 7:30. For the master of the house it is perhaps the lightest meal of the day. But again a full hour is required to consume the tiny grains of food he permits himself. A short rest while the table is being cleared in the great dining room, with its heavy, simple, old-fashioned furniture. Then comes the evening's chief amusement.

A long life of devotion to pietistic principles excludes all thought of card playing or gambling from the mind of John D. Rockefeller. But, somewhere in his soul, there must be a lingering weakness for games of skill and chance. For he passes most evenings between dinner and bed time, with an interest that never flags, in a parlor game consisting of 52 counters of the same color, numbered from 1 to 13 inclusive, four of each number.

The game is called Numerica. It could be accomplished with four ordinary poker decks, colored red, blue, yellow and green. But that would be card playing and Mr. Rockefeller has never touched a card in his life!

So the master of Standard Oil sits at the head of the table and deals—no, that's the wrong word!—distributes sets of the little square counters. Then he shuffles his own discs, draws numbers at random, and calls them off.

H's Parlor Game

The object of the game is to build four stacks of consecutive numbers from 1 to 13. One must be careful to avoid "shutting in" smaller by larger numbers. It is possible to score a count of 52 in one round of the game. A moderately good player makes the maximum count one time out of three. Mr. Rockefeller is so expert at shifting and building that he has been known to make several perfect scores in succession.

When he makes his 52, John D. chuckles as joyously as he did 60 years ago when he'd rush into the office of Rockefeller & Andrews in Cleveland, do a snake dance and shout joyously at Sam Andrews, his first partner: "We've got another refinery, Sam. One more in the field!"

These evenings, when he wins the round at Numerica, John D. smilingly transfers a shining buffalo nickel from the right pocket of his dress waistcoat to the left. The left pocket holds his "winnings." And though no gambling can be tolerated in the Rockefeller household, the oil king invariably bestows a 5-cent reward upon the winner!

Half a dozen or more games have generally been played by 10:30 when Mr. Rockefeller's valet appears to remind him of bed, and it is a poor evening that

PATRICK CARBON
for Diamond Core Drilling

"Specify Patrick Carbon"

OUR idea of building a business is to have it rest upon the bed-rock of satisfaction. We consider no carbon transaction as finally closed until the buyer is completely satisfied.

SEND FOR BOOKLET

You can get in touch with our representative by wiring Duluth office

R. S. PATRICK
Duluth, Minnesota, U.S.A.
Cable Address, "Exploring" Duluth

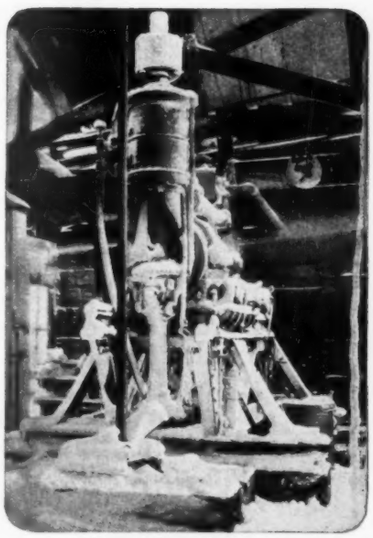
Diamond Drill Solves Problem at Calgary

Shallow production has been common for 12 years in the Turner Valley Field, Alberta, Canada—but until recently it has never been possible to drill into the high pressure gas production below the cap rock, and successfully complete a well.

Terrific gas pressure and hard limestone made a double problem. Rigs that could stay in the hole couldn't cut the rock—and rigs that could cut the rock couldn't stay in the hole.

Three different wells were drilled into the pressure, estimated at 2500 lbs. to the inch—and in each case the tools were blown up in the hole and lost. Rapid expansion of the gas froze things up and handicapped fishing.

Until a few months ago not one well had been successfully completed—then the Illinois Alberta Oil Company solved the problem with a diamond drill. Boring down to a depth of 3500 feet with an ordinary rig, they reached the lime. To cut the hard lime and handle the gas pressure they substituted a "P-2."



Sullivan Diamond Drill

The diamond drill bored rapidly down through the hard rock, and though it had some difficulty with low temperatures, it brought in the well at 3857 feet, under control. *Write for the free 80-page handbook "Diamond Drilling for Oil."*

Sullivan Machinery Company
88 East Adams Street, Chicago

He'll work with greater
EASE, SAFETY and COMFORT
with an
M-S-A STANDARD
HOSE MASK

Supplies a continuous stream of fresh air to workers in tank cars, oil tanks or in any confined gaseous space.

Fresh, cool air blowing over the face of the worker enables him to work for long periods in absolute safety.

Standard for the American Gas Association. Send for Bulletin No. 99G for description of M-S-A Hose Masks.

Outside man operating the Blower

Mine Safety Appliances Co.
Braddock Ave & Thomas Blvd. Pittsburgh, Pa.

New
Independent Oil Booklet

This Booklet contains description of properties, latest financial statements, dividend records and other important information regarding this group of companies.

Copy upon request

CARL H. PFORZHEIMER & CO.
(Specialists in Standard Oil and Miscellaneous Oil Securities)
25 Broad Street New York, N. Y.

finds John D. winner of less than half the games played by the company. The Numerica expert walks cheerily to the elevator, mounts to his suite and is peacefully slumbering by 11.

John D.'s devotion to this type of game shows he is still "a man of figures."

"I have never felt the need of scientific knowledge," he said recently. "A young man who wants to succeed in business does not require chemistry or physics. He can always hire scientists.

"He should study figures, figures, figures and apply them to his business. What does he intend to sell or manufacture and how many people will buy his product? Let him first take paper and pencil and study his market and its possibilities. Figures come first always." Even to this day, the man of figures keeps a personal account book.

Admirer of Ford

Mr. Rockefeller likes to cast back upon his business career. Those in intimate touch with him say that if he were carving out his great fortune today he would follow Henry Ford's example of paying high wages and making moderate disbursements of alms rather than his own method of paying low wages while piling up his fortune and eventually redistributing hundreds of millions. He is a great admirer of Ford and has followed the latter's career with intense interest. He believes the Ford system of high wages and short hours stimulates production.

Roughly, Mr. Rockefeller has given away $600,000,000. His principal charities are: The Rockefeller Foundation, endowed at $82,000,000 "to promote the well-being of mankind throughout the world"; the General Education Board, $70,000,000, to assist colleges in increasing their endowments and raising the salaries of teachers; Rockefeller Institute, $10,000,000, devoted exclusively to medical research; and the Laura Spellman Rockefeller Memorial, $63,000,000, which is designed to promote the welfare of women and children.

Of course, it is impossible for the donor to keep in close touch with details of administration of these funds. John D., however, has surprising knowledge of what is going on. Sometimes he astonishes Doctor Vincent or other directors of the various Rockefeller endowments by the nature of his questions when the officials accept his hospitality over the week-end.

Mr. Rockefeller depends, chiefly, for his information as to the details of his great charities, upon his only son. John D., Jr., is his father's prop and staff. The junior Rockefeller seems to live in and for his sire. No closer relationship has ever existed anywhere between father and son; and there is, apparently, complete understanding, trust and sympathy between the two.

There was a time when clouds of depression swept over Rockefeller. These gloomy spells were particularly noticeable when his wife, his brother, William, and his friend John D. Archbold, died. Now he looks upon death as calmly as one watches an autumn leaf fluttering to earth. Thus, recently, he took the passing of his old crony, Dr. H. F. Biggar, the man who forced him to drop active business.

"I don't let anything bother me now," he says, "I keep cheerful. It is true that I am saddened now and then by the death of an old friend, but I make new ones and people are very kind to me."

It is noticeable that Mr. Rockefeller more and more cultivates acquaintance with young people. He seems to shy at forming new and deep friendships with the old, in order, perhaps, to spare himself the shock of surviving them.

An Early Ambition

He delights in old-fashioned songs and old-fashioned hymns and often hums a chorus. He has a natural ear for music and confesses he was once ambitious to lead a band! Occasionally, he has an organist out from New York to play upon the magnificent instrument at Pocantico.

Another of his favorite grandchildren, Fowler McCormick, frequently goes to Pocantico to play the organ. On these evenings the Oil King abandons his passion for Numerica and sits wrapped in delight as tunes of splendid old favorites roll through the house: "Coming Through the Rye"; "Annie Laurie"; "Silver Threads"; and "If All Those Endearing Young Charms." At Princeton young McCormick led the Triangle Orchestra and he is now an excellent musician.

Mr. Rockefeller enjoys family gatherings to a greater extent each year. This Christmas several of his children and grandchildren joined him for the holidays at "The Casements," his rambling, unpretentious house at Ormond. He likes to recount incidents of his life. The younger grandchildren listen, wide-eyed, when he describes how boys in his childhood were awakened by the sound of woodchoppers' axes at 4 o'clock of winter mornings; how they rose by lantern light and heard brittle snow squealing under sled runners. When he was a boy living in a rude farmhouse, near Moravia, N. Y., he sold a brood of turkey chicks and put his first coins in a china dish on the mantel.

John D. is fond of preaching religion and thrift through homely parables. The parables are not "snappy stuff," but have the rugged appeal of "Poor Richard." When young Winthrop Rockefeller, one of John D., Jr.'s sons, was in short trousers, Grandpop used to tell him the story of a little boy's dream:

"There was once a little boy who did not like things as they were. He dreamed one night that he had made a world where there were no Sunday schools. He thought he liked this world.

"He thought in his sleep it was a beautiful place. But soon he began to miss something. There was something lacking. He took the matter to heart. Somebody asked the little boy if he had made that world. 'Yes,' he answered tearfully, 'but I'll never do it again.'"

This is one of his favorite parables. He used it when a young man teaching Sunday school in Cleveland.

I don't know what impression it made on Winthrop, but the latter assuredly approved of one habit of his grandfather. He loved to collect Grandpop's dimes. When he was the merest tot he used to run to the old gentleman, hold out his hand and lisp: "Grandpop, I've got a great big kiss for you." Grandpop got his kiss and Winthrop invariably got his dime. "That boy will make his way in the world," John D. was accustomed to remark after each such incident.

At that time, Rockefeller, Jr., gave his children for spending money a penny a week for each year of their age. The dimes Winthrop kissed out of Grandpop were vastly more valuable than his allowance. Perhaps the lad's motive was slightly ulterior!

His Philosophy

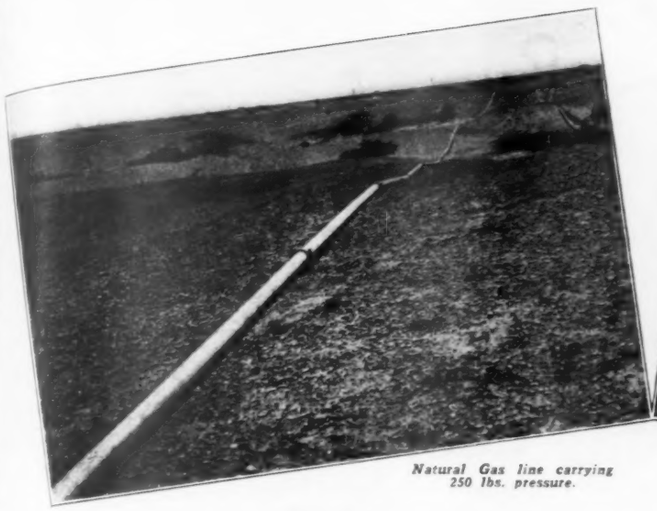
Except for the books and papers I have mentioned, John D. does no reading. He has practically no knowledge of literature, little appreciation of art, no indulged weaknesses, no pet luxuries. With increasing years, he has grown more liberal in his religious and social views. He is an intense disbeliever in divorce, for instance. Yet he is extremely fond of Harold F. McCormick, who was divorced some years ago from his youngest daughter, Edith.

He believes very firmly in a personal God and a "permanent" hereafter, where the good will be rewarded and the wicked punished. He is quietly positive his own good deeds will be recognized when the roll is called up younder. He is sure the Golden Gates will be flung wide to him. Though apparently unworried over the future, he is like most of us—saint and sinner alike—determined to remain on this sphere as long as possible.

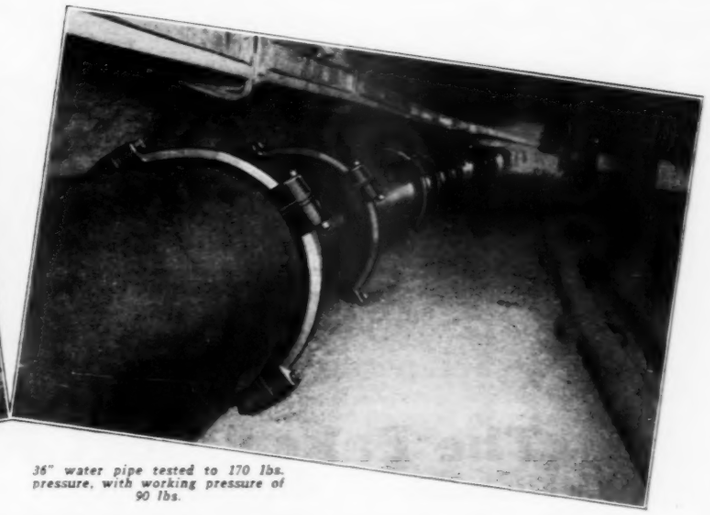
His philosophy is pretty completely summed up in a five-line verse he attempted on his eighty-sixth birthday:

"I was early taught to work as well as play,
"My life has been one long, happy holiday;
"Full of work and full of play—
"I dropped the worry on the way—
"And God was good to me every day."

He likes to quote maxims of his late wife, such as: "To be a good wife and



Natural Gas line carrying 250 lbs. pressure.



36" water pipe tested to 170 lbs. pressure, with working pressure of 90 lbs.

What engineers say about VICTAULIC Joints

Special features and advantages of Victaulic Joints

Joints up to 12" diameter can be made by unskilled labor in two minutes.

Victaulic Joints cannot be put together wrongly.

Every Joint is leaktight, flexible and permanent.

Every joint is an expansion joint.

Any length of pipe is renewable without disturbing any other length.

Exact alignment is not required in jointing and every joint can be deflected approximately 5 degrees.

Vibration or earth movement—even an earthquake — does not cause a shock-absorbing Victaulic Joint to leak.

Victaulic Joints do not fail under pressure that ruptures steel tubes.

Victaulic Joints may be specified safely for petroleum, gas, sewage, water and compressed air lines.

Victaulic Joints are giving perfect service on lines carrying as high as 2 tons pressure per square inch.

THERE was not a breath of air from any of the joints."

"1000 lbs. hydraulic pressure for several months without the slightest variation."

"Was delighted with ease with which the large pipes were put into place and coupled up, compared with a similar operation with old fashioned flange joints."

"Have just completed an inspection without finding a leaking Victaulic Joint. But I did find the customary number of flange joints leaking."

"We have 5 to 6 miles of pipes with Victaulic Joints and so far as our collieries are concerned we would not consider the installation of any other make of joint."

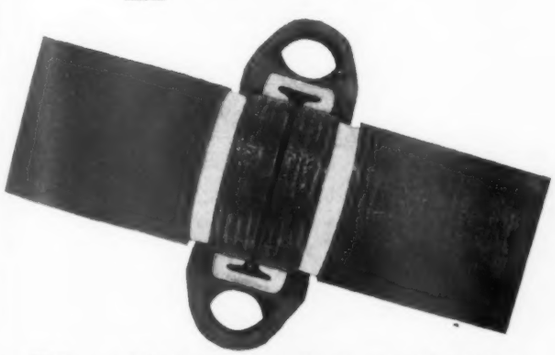
"The line (10-inch steel pipe) has been subjected to a test pressure of 250 lbs. and a partial vacuum, and has since been working regularly with oil fuel and shown no sign of leakage. The joints have undoubtedly saved a considerable amount of time and money in erecting the pipe line and I shall use them for other pipe lines under similar conditions."

"The joint was used to couple together two pieces of pipe—pumped up to 1000 lbs. per square inch, sealed and totally immersed in water. The cooling effect of so doing caused the pressure to drop to 900 lbs. per square inch. *This pressure has remained constant in the pipe for three weeks,* or just over 500 hours."

"We have pipes from 2½" to 6" diameter in use for air transmission at 65 to 70 lbs. per square inch and they are mostly laid upon the floor of the mine where they are exposed to a fair amount of movement or distortion, and I must say we have never had a leak or cause to remake a joint."

For detailed information on Victaulic Joints for use with steel, wrought iron or cast iron pipes, for any pressure, low, medium or high, for lists of uses and users, write for Victaulic Bulletin No. 1.

VICTAULIC COMPANY OF AMERICA
26 Broadway, New York, N. Y.
Mid-Continent Representatives: Smith Separator Co., Tulsa, Oklahoma



Flexible and Leaktite Pipe Joints

"FOR EVERY JOINT ON THE LINE"

VICTAULIC
REG. U. S. PAT. OFF.

FOR CRUDE OIL, GAS, WATER, SEWAGE, COMPRESSED AIR, ETC

BAKER

The Baker Float Plug Combination

The heaviest strings of casing can be landed with perfect safety with the Baker Float Plug Combination. In Cementing Operations it does away with the necessity of closing in well or maintaining pressure on casing to keep cement outside. It gives every advantage of a floating plug at the lowest possible price. Consists of a Baker Plain Casing Shoe, Baker Rotary Hole Guide, Screw Type, and a Back-Pressure-Valve.

Baker Float Plug Combination
Note clearance at bottom of Baker Plain Casing Shoe, the design of the Baker Rotary Hole Guide and manner in which the Back-Pressure-Valve is fitted.

Baker Rotary Hole Guides

Baker Rotary Hole Guides, either Slip Type or Screw Type, are furnished separately or in combination with Baker Plain Casing Shoes and Back-Pressure-Valves to suit every requirement.

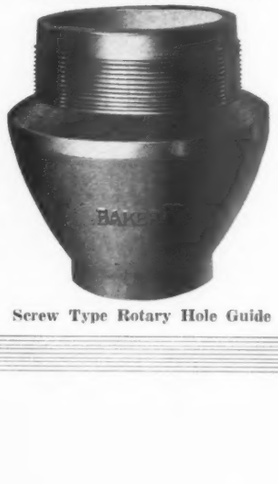
Slip Type

The Slip Type Rotary Hole Guide can be fitted to the casing shoe without machining the shoe. When fitting, it is driven into the shoe until it shoulders on the shoe edge, and the slips are driven tight by means of a bar entered through hole of guide and side openings in shank. The slip thus driven in will take a bull-dog grip that will not come loose.

Screw Type

The Screw Type Rotary Hole Guide is threaded to screw in the casing shoe. When a Baker Plain Casing Shoe is ordered with a screw type Rotary Hole Guide, no extra charge is made for threading the shoe. Both the Slip and Screw type Rotary Hole Guides come with valve stem guide and are machined to take a Baker Back-Pressure-Valve. Used without the valve, they serve the purpose of plain shoe guides for rotary holes.

Slip Type Rotary Hole Guide



Screw Type Rotary Hole Guide

BAKER CASING SHOE COMPANY

Coalinga, California — Taft, California

Box L, Huntington Park, California.

Export Sales Office:
25 Broadway, New York City

Mid-Continent Representatives:

B & A SPECIALTY COMPANY
220 East Brady St., TULSA, OKLA.
312 Keystone Bldg., HOUSTON, TEXAS

mother is the highest and hardest privilege of woman"; and to recall incidents of his courtship of brown-eyed, dark-haired little "Cettie" Spellman, daughter of a prosperous merchant. The first set of dishes used by John Rockefeller, bookkeeper, and his bride, when they began housekeeping, in 1864, in a two-story brick house in a Cleveland side street, has been carefully preserved, and is among John D.'s greatest treasures.

Mr. Rockefeller is passionately fond of Pocantico Hills. He has spent millions upon millions, certainly 20, perhaps 40, upon Pocantico. His pay roll has averaged $30,000 a month for 25 years, but it makes only a tiny dent in his own personal fortune, which is still to be counted in the scores, perhaps hundreds of millions—despite his numerous benefactions.

When he was told in 1899 to slow down his pace or die, he threw himself into the pastime of acquiring a great estate. He planned Pocantico Hills, supervising every detail, just as he had wrestled with busines problems. He found the work an outlet for tortured nerves.

In a few years he possessed the most magnificent private estate in America. The mansion, with its great peaked roof, sits on the summit of Kyk-Uit Hill and dominates the Hudson for miles. Under his direction were constructed elaborate sunken and terraced gardens, open and enclosed, lakes, waterfalls, and fountains, electrically equipped.

He built the house with a view to light, air, beauty and comfort. He wanted the house constructed in such a way that he could be certain to secure light in his favorite rooms at such hours as he needed it. To this end he ordered a small boxlike structure to be built and placed upon a turntable on the center of his new site. Ingeniously arranged mechanism made it possible for Mr. Rockefeller, seated in this boxlike affair, to turn it about by means of levers. After much experimenting he composed a time-table. This was the result of many days spent in the temporary structure. By the time the table was completed Mr. Rockefeller had learned when the sun would shine into each room. The time-table was based upon his own daily scheme of life.

For instance, he wanted light in his dining room in the morning and at noon. The only time he insisted upon having light in his den or office was between 2 and 3 o'clock in the afternoon. He wanted his own bedroom dark between 3 and 4 o'clock in the afternoon, the hour in which he then took his only daytime nap.

The architects followed this plan faithfully in building the house. Mr. Rockefeller gave personal attention to a thousand other improvements and details, and Pocantico Hills is a flawless country home, set upon a flawless estate.

In his lovely hill-top palace, this "man of figures" sits awaiting the call to another Palace. He is serenely confident the mansion that has been reserved for him in the sky will make Pocantico Hills look like a laborer's hut!

POSSIBILITY OF OIL STRUCTURES IN GULF

(Continued from Page 80)

should engineers ever succeed in conquering the shallow regions of the Gulf as a source for supplying petroleum. There seems to be no reason why the principle of discovery of mineral land at the bottom of the ocean should not give a prior right just as does the discovery of land above the ocean level.

As interpreted by Doctor White, the topography of the ocean bottom gives indications that point to the conditions similar to those that pertain on the land. He said:

Doctor White's View

"It is practically certain that along the salt dome belt of the Gulf Coast there are salt domes below tide level as well as above tide level; and sonic sounding, such as might easily be done from a small boat or private yacht during a few months, might reveal indications of favorable structure as strong or even more strongly expressed in the submarine topography than they are found in the exposed coast area, where in fact they are generally very faint.

"The coast region, itself, is obviously sea bottom, elevated above tide no so long ago and not yet notably dissected. A salt dome beneath the shallow waters off shore in the gulf may be as productive of oil as is any dome in that vicinity, such as Goose Creek or Beaumont."

About the only information available to throw any light on the possibility of oil structures off the coast of Texas and in the Gulf of Mexico is contained on charts made by the Coast and Geodetic Survey.

These charts give some general information as to the ocean bed, but the sounding made by old methods are very irregularly distributed and vary from 2 or 3 to 40 miles apart. In places they are close, but in very large areas there are none. While they show great inequality in ocean depths, they lack regularity and closeness of position even in the most fully surveyed areas. They are already sufficient, however, to indicate important as well as interesting features of the ocean bed.

Here and there, going out from Galveston for about 30 to 35 miles, there are humps on the bottom over which the water is not more than 4½ to 5¾ fathoms deep. Ten fathoms, or 60 feet, is about the deepest water encountered in this part of the gulf. In many places the water is not over 25 feet deep.

Sonic Soundings

The entire topography of this section of the gulf might with great ease be made known by means of sonic soundings. Apparatus for sonic sounding might be installed on any yacht or small vessel at a cost of from $4,000 to $5,000, and with that equipment the sounding would be made very rapidly as the vessel passed from one point to another. In fact, they are made just as rapidly as the echoes are recorded from the bottom, which in shallow water would be only a few, perhaps three or four, seconds.

On the chart of the Coast and Geodetic Survey the depths out to the 100-fathom line show very great variations, and beyond that line there are drops in valleys of as much as half a mile in depth within a distance of 6 or 8 miles. The ocean bed is far from being a plain, and if it were exposed to view it would be regarded as rough country. It is just as certain that there are salt domes near shore in the northwestern portion of the Gulf of Mexico as there are on shore. A yacht equipped with apparatus for taking sonic soundings should have on board one or two young physicists who would attend to the details of mapping the ocean bed off the Texas coast. Radio compass will give positions or bearings. The work could be pursued as the ship sails along day or night. The small expense involved easily places such exploration within the power of any wealthy owner of a yacht or other small vessel.

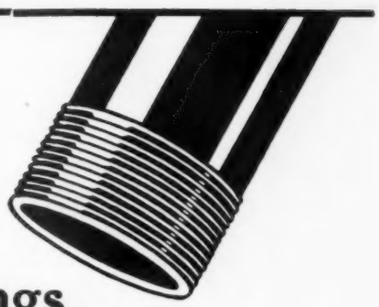
Oil Spots in Gulf

It should be remembered that since 300 years ago oil spots in the Gulf of Mexico have been known. Many of the so-called oil spots have been charted and are well known to mariners. That means nothing less than that there are oil reservoirs beneath the waters of the Gulf.

Wells have been drilled near Tampico in the lagoon near the ocean short line. It is well known that at Carpenteria and Summerland near Santa Barbara the ocean has been invaded by oil derricks, with piers going out from the shore to the derricks. However, the invasion of the ocean in permissible depths is a new proposal, but Doctor White believes that some day somebody working in shoal water like that off the Galveston district will do some wildcatting if prices of oil offer sufficient encouragement.

Whenever there has been a radical departure from established practice or great advance in any branch of human endeavor the first suggestions pointing to the discovery involved have of necessity been general in nature with detail still to be supplied to make the innovation practicable.

The first suggestion of Drake for drill-

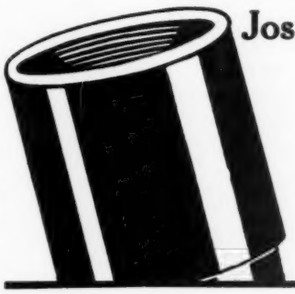


New Threads and Couplings

make this pipe a genuine bargain!

Save money with Greenspon's pipe—prices run 1/3 to 1/2 lower. You get guaranteed pipe, every length of which has been thoroughly inspected, equipped with new threads and fitted with new couplings. You will get years of service from it. Greenspon's casing, and ODEE pipe for gas lines, are likewise guaranteed! Ready at our yards in sizes to suit your needs, for immediate shipment.

Write today for prices—see for yourself how much you can save!



Jos. GREENSPON'S Sons Iron & Steel Co.

SAINT LOUIS
Tulsa, Oklahoma
Fort Worth, Tex.

"A REAL OIL COUNTRY BELT"

O AND G

OIL GAS

Pumping—Drilling — Compressor
Double-Stitched

BELTS

RUGGED — DURABLE

Built to successfully withstand the hardest oil field service—growing in popularity daily

Manufactured by

IMPERIAL BELTING CO., Chicago

Sold by

OIL WELL SUPPLY CO.

In All Fields

FENWICK-REDDAWAY MFG CO. NEWARK NEW JERSEY
IWANA HAIR BELT
"IWANA"

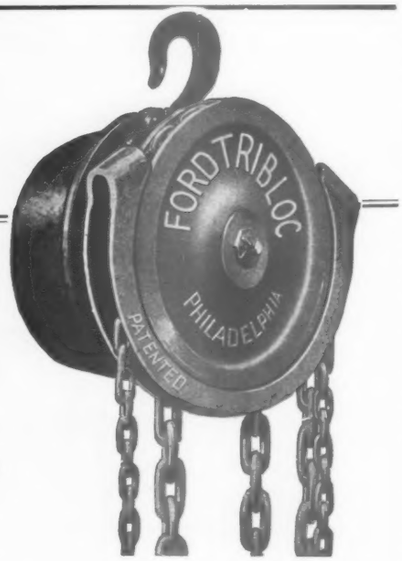
HAIR BELT

ECONOMY!

In length of service and continuous operation, as well as the full percentage of power transmitted with minimum waste under all conditions. Specify "Iwana" —the economical belt.

FENWICK-REDDAWAY MANUFACTURING CO.
NEWARK, N. J.

Tulsa Representative: A. F. Campbell, P. O. Box 171



Its "Backbone" is strong *and in the right place*

Tribloc Chain Hoists afford consistent, satisfactory service under the most gruelling tests because the "backbone"—that small part hidden inside the gear case—possesses a 3½ to 1 factor of safety. No amount of frills will make a hoist serviceable unless this part has strength in the right place. Unstinted effort is expended to maintain this and other Tribloc parts to high standards.

We would like to tell you how and why this effort can be capitalized in your own work.

Ask us to send you Catalog 7-B

FORD CHAIN BLOCK CO.
2nd and Diamond Sts.,
Philadelphia, Pa.

We also manufacture "THE MOTORBLOC"—
an electrically driven chain hoist.

ing on land for oil attracted little attention until his well was successful. It was but 68 feet deep, and when the petroleum industry was once launched by his genius the idea that the drill would ever penetrate the earth to a depth of nearly a mile and a half was never in the mind of anyone, and would have been scouted as visionary had anyone then suggested the possibility of such an achievement.

Of course, the most immediately practical features of this suggestion relate to that portion of the gulf near the coast of Texas as offering most accessible points of attach by engineers should they be called upon to solve the problems involved in such an enterprise. While the ocean bed near the shore line is of first interest in any prospective operation, the ocean bed farther out promises important information for the scientists whose study there may throw much light on conditions nearer or on shore.

A study of what little is known as to the topography of the bottom of the Gulf of Mexico indicates that between the line marking the depth of 100 fathoms, or 600 feet, and the shore the depths are variable, with humps suggesting salt domes approaching relatively near the surface. Beyond a depth of 85 fathoms, only a few miles, 150 fathoms are reached, and then 2 miles farther 218 fathoms along one line of soundings. The topography in the region of 400-600 fathoms is extremely uneven. It is in this portion of the gulf, and beyond, that sonic soundings should reveal the features of mountain folds, fault scarps, anticlinal trends, or tectonic characteristics throwing much light on the buried structures on the shore.

Topography of Ocean Bed

These investigations in the deeper water, while they may be without immediate practical results in obtaining oil, may lay the foundation for discoveries later of unexpected value, just as has been the case with most basic discoveries.

The stronger topography of the gulf bottom lies farther out where there is a high relief, indicating former exposure of portions at least of the deeper part of the bottom of the Gulf of Mexico. The development of high ridges and deep valleys almost unmistakably indicates structure and interesting geologic history, the dates in which are conjectural. Detailed soundings and contouring of portions of the Gulf of Mexico would be interesting to the oil men as well as to the ordinary geologist, though the topography is not as strongly developed nor are the evidences of folding and faulting so impressive as in the Caribbean region.

The trend of the submarine ridges, so far as they can now be made out from the deeper sonic soundings opposite the salt dome belt, indicate a structural trend, arching landward and roughly parallel to the coast or diverging from the coast to the eastward.

Indications of nearshore domes that may be brought into consideration topographically by sonic soundings will presumably be subjected to tests by gravity or seismological methods comparable to those now employed on the exposed land. These observations could be made from the same class of craft used to take the sonic soundings.

Beyond the interest in the oil, geologists would be interested in these investigations because of the deductions to be drawn as to the geologic history and structure, including tectonic trends.

As has been indicated, it is fully realized that the future concern of the geologist and oil producer on this subject must depend upon the price of oil. However, so far as the topography of the Gulf of Mexico is known, and our information is very insufficient, there is much reason to believe that the gulf may hold important reserves in addition to those now known in the State of Texas.

OPENS BUFFALO OFFICE

The Brown Instrument Co. of Philadelphia, Pa., announces the opening of an office at Buffalo, N. Y., in charge of D. C. Maynem, district manager.

Oil Fields of Burma Found in Long Line From North to South

By L. Dudley Stamp, D.A., D. Sc. (London), A. K. C., F. G. S., F. R. G. S., A. M. I. P. T.*

The oil fields of Burma are found as a long line running from north to south near the center of the synclinal trough which forms the center of Burma. It may be said at once that the important fields: (a) line near the center of the trough; (b) are on gently folded anticlines-puckers in the synclinal trough.

There are some half-dozen quite minor fields and it is found that these either (a) are slightly away from the center of the trough; or (b) are on highly folded or irregular structures.

The oil fields to be considered are as follows:

Indaw, Yenangyat, Singu, Yenangyaung, Minbu (Yethaya) Tagaing, Padaukpin, Ngahlaingdwin, Yenanma.

The Indaw Field was discovered rather over a dozen years ago by the geologists of the Indo-Burma Petroleum Co., Ltd., and production is first recorded officially for 1918. Structurally it is a fine, gently folded open dome and the field has great possibilities, since production up to the present has been from shallow sands. Deep testing is being carried out, but so far has been unsuccessful, due to drilling difficulties and heavy gas. Indaw is situated in the wet zone of Upper Burma, north of the dry belt, and health conditions have caused much trouble, but active measures have been taken to combat fever.

The company has followed the policy of steady development; the oil is sent by pipeline and refined at Pantha (22 miles distant) on the River Chindwin from whence it is sent down the river and supplies the local markets of Upper Burma. The petroliferous rocks of the great oil fields of Yenangyat-Singu and Yenangyaung, pass northward into barren, fresh water strata and the oil-bearing rocks of Indaw are probably much older than in other parts of Burma. The production at Indaw is shown in the annexed figures:

	Gallons
1918	473,800
1919	1,085,030
1920	1,022,766
1921	1,182,782
1922	1,210,914
1923	1,311,664
1924	1,474,898
1925	

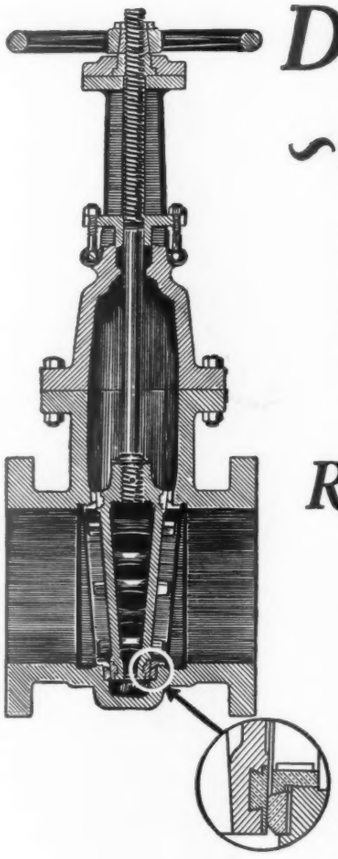
Yenangyat-Singu

Yenangyat and Singu should, geologically speaking, be described together since they form part of one long anticline some 30 miles from north to south and striking a few degrees west of north. The fold is, however, breached by the River Irrawaddy; Yenangyat Field lies to the north, Singu Field to the south. Like many of the folds of central Burma the Yenangyat-Singu structure has a gentle westerly limb and a steep, almost vertical, easterly limb. Indeed, in the case of Yenangyat the eastern limb is slightly overfolded. The position of the two main fields on the fold is determined by the presence of crest-maxima. The rocks brought up by the fold are Peguan (Oligocene-Lower Miocene) in age, the surrounding rocks being the barren fresh water Irrawaddian sands. The Peguan rocks themselves pass steadily northward into fresh water deposits and at the northern end of the Yenangyat fold this change may be seen taking place. This is one reason why the northern end of the fold is non-productive and seems also to account for the rapid exhaustion of the northern of the two fields—Yenangyat. This exhaustion is shown by the following figures:

	Gallons
1917	6,700,000
1918	4,739,587
1919	4,123,387
1920	3,176,231
1921	2,510,533
1922	2,413,416
1923	1,700,035
1924	1,594,517
1925	

Singu, on the other hand, has still great

*Before Institution of Petroleum Technologists, London.



Don't REPLACE Valves ~RENEW them~

Modern valve engineering, as practiced by Pratt & Cady, plans and produces valves that can be *renewed* repeatedly.

Such valves are seldom taken out of the line. It is only necessary to take off the bonnet to make the renewal. Therefore, not only the cost of a new valve but valuable operating time is saved. One of the distinctive features for gate valves is the

PRATT & CADY *Retaining Ring Construction*

The usual one piece ring seat is frequently warped in tightening it into place. Therefore, if the valve is to be tight the seat ring must be finish faced after it is screwed into the body. This is not necessary with Pratt & Cady Retaining Ring Construction.

Here's why:

1. A separate retaining ring screwed into the body casting takes up all strain and distortion due to tightening of the seat ring into place.
2. The seat ring is firmly held by the beveled lip of the retaining ring. As any distortion of the retaining ring is lost in slip on the beveled surface, it is practicable to finish the face of the seat ring before it is forced into place by the retaining ring.
3. Thin gasket back of seat ring acts as cushion to prevent distortion and also as a seal against leakage between ring and body.

READING STEEL CASTING COMPANY, *Inc.*

An Associate Company of the American Chain Company, Inc.

BRIDGEPORT, CONN.

Offices and Warehouses:

Boston, Charlotte, Chicago, Cleveland, Detroit, Hartford, Houston, New York, Philadelphia, Pittsburgh, Rochester, St. Louis, San Francisco, Tulsa

Stocked by:

Reading Steel Casting Co., Tulsa
Norvell-Wilder Hardware Co.
Beaumont, Houston, Shreveport, Fort Worth
Woodward, Wight & Co., Ltd., New Orleans

Pratt & Cady Heavy Iron Body Gate Valve, Stationary Spindle, 200 lbs. working pressure, 500 lbs. test.

Pratt & Cady Heavy Iron Body Gate Valve, Rising Spindle, 200 lbs. working pressure, 500 lbs. test.

Pratt & Cady Extra Heavy Iron Body Gate Valve, Stationary Spindle, 250 lbs. working pressure, 800 lbs. test.

Pratt & Cady Extra Heavy Iron Body Gate Valve, Rising Spindle, 250 lbs. working pressure, 800 lbs. test.

READING *for* steel
PRATT & CADY *for* iron *and* bronze
specializing for quality valves* AND *fittings

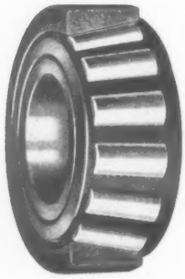
Quarter Million Pounds of Thrust

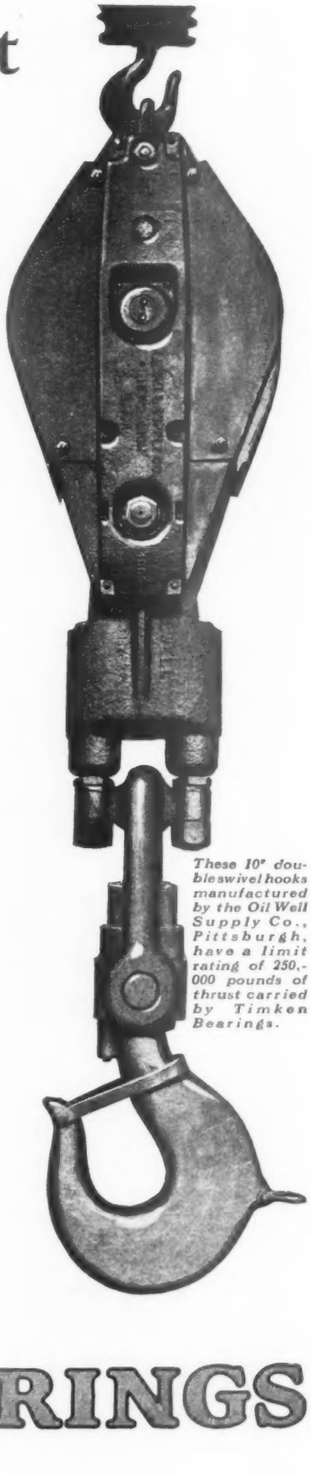
The oil fields are full of big mechanical loads. The very biggest are being entrusted to Timken Tapered Roller Bearings. They are made for it. Their tapered design takes the friction out of thrust, as well as out of radial load. Their Timken-made electric steel is shock-proof.

Timken-protected drilling is faster, more certain, power-saving, and free of the risk of lubrication failure. The greatest operators are sure of it. That is why the greatest supply manufacturers are featuring Timken Tapered Roller Bearings.

THE TIMKEN ROLLER BEARING CO.
C A N T O N , O H I O

Technical information regarding bearing sizes and mountings is obtainable from the Timken Roller Bearing Service & Sales Company's Branches located in the following cities: Atlanta, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, Newark, New York, Omaha, Philadelphia, Pittsburgh, Richmond, St. Louis, San Francisco, Seattle, Toronto, Winnipeg





These 10" double swivel hooks manufactured by the Oil Well Supply Co., Pittsburgh, have a limit rating of 250,000 pounds of thrust carried by Timken Bearings.

TIMKEN *Tapered Roller* **BEARINGS**

reserves and its production is likely to increase. A promising area lies in the bed of the Irrawaddy between the two existing fields and steps are being taken to reclaim a portion of this area and develop it. A shallow portion of the river is being shut off by a rubble wall, and drilling is to be carried out on the land so reclaimed. The recent production of Singu is shown in the following table, the decrease in 1922 and 1923 is to be attributed mainly to labor troubles, particularly to the strike of 1923. The figures may not appear very encouraging to those who look for spectacular jumps in production in Biritsh-owned fields, but they are consistent with the policy of the steady and truly scientific exploitation which is the strong feature of British oil interests the world over.

	Gallons
1918	61,035,982
1919	93,626,506
1920	95,256,753
1921	104,167,749
1922	92,107,998
1923	87,476,474
1924	79,938,430
1925	

Yenangyaung

Yenangyaung is a fine gentle dome, slightly elongated in a north-northwest and south-southeast direction. It is situated right in the middle of the Tertiary trough of Burma and one point to be noted is the fine gathering ground for many miles round. The oil again comes from Peguan rocks. Considering its size Yenangyaung can lay claim to be one of the wonder fields of the world, the production of 3,000,000,000 gallons since 1900 having come from an area of just over 1 square mile. Two portions of the field, named the Beme and Twingon reserves, were set aside by the Government for the use of the hereditary native owners (Twinzayos). Though some oil is still obtained by native hand-dug wells, the Twinzayos have sold nearly all their well sites to the big companies and it is in these reserves that competition has been and still is so extraordinarily keen. The minimum distance between well sites is 60 feet; the prices demanded by the Twinzayos for a site has risen steadily from less than 50 to 50,000 rupees; there are now scarcely any available sites of value remaining. Outside the reserves—in the preserves of the Burmah Oil Co.—development has been steadier and increase in the number of wells in the area seems likely to maintain production for some years to come. More recently oil has been struck at depths of over 3,000 feet in the southern portion of the field, more than a mile from the main producing area.

	Gallons
1918	203,638,043
1919	190,322,077
1920	176,285,048
1921	184,420,141
1922	179,741,493
1923	175,158,721
1924	181,636,739
1925	

Minbu

Minbu, like Yenangyat-Singu, is another long field of Peguan rocks but in this case is not closed to the south. Again there is a comparatively gentle western limb and an almost vertical eastern limb. As an oil field it never has been, and never will be, really important. A large part of the Peguan rocks exposed consists of a comparatively deep water shale, incapable of carrying oil. The upper sandy group, which is petroliferous, has been removed by denudation over most of the area. The existing production comes from four areas: (1) From the upper beds in the northerly pitching northern nose of the main fold, north of Minbu town. (2-3) From two subsidiary dome structures developed in the midst of the main fold and where petroliferous sands at a much lower horizon are reached. These two structures are usually called the Palanyon and Yethaya Fields. (4) From lower sandy beds of a subsidiary northerly pitching nose at the southern end of the main fold (Tagaing or Minhla Field).

In both the first and fourth cases the oil has accumulated on a sort of terrace resulting from a change in pitch. Many of the Minbu wells are still yielding a few gallons a day, although they only reach a depth of 200 or 300 feet and have been pumped continuously for as many as 14 years. Yethaya and Palanyon are now the most steady producers. Tagaing has never paid its way.

Minbu, Palanyon and Yethaya

	Gallons
1914	1,683,190
1915	2,316,207
1916	2,043,542
1917	3,468,382
1918	4,826,735
1919	4,423,361
1920	3,835,198
1921	3,706,831
1922	3,940,416
1923	3,915,140
1924	3,829,044
1925	

Tagaing (or Minhla Field)

	Gallons
1914	22,836
1915	25,920
1916	35,000
1917	30,000
1918	63,000
1919	113,784
1920	91,329
1921	66,372

Later figures not available.

Padaukp'n

Coming southward, the Peguan rocks, as a whole, become more argillaceous and probably of deeper water type. The highest beds are more mixed and capable of carrying oil, whilst much lower in the sequence are sandy groups, locally petroliferous. One of these lower sandy groups is exposed in the gentle, oval-shaped dome of Padaukpin. Whilst the structure is good, it is doubtful whether the petroliferous strata attain any considerable thickness. Since 1920, the field has been developed by the Indo-Burma Oilfields (1920), Ltd. Pumping started on March 7, 1922, and the production as recorded by the company has been:

	Barrels
1922	13,524
1923	16,079
1924	15,208
1925	*14,000
1926	†17,000

*Approximately.
†Estimated.

Ngahlaingdwin

This field, which is really still in the exploration stage, is situated at the southern end of a long narrow fold of Peguan rocks. Further north is the Pauk Field, which has yielded a small quantity of oil. Ngahlaingdwin is being exploited by the British Burma Petroleum and the Indo-Burma Petroleum companies. The oil appears to come from the lower beds of the Peguan, and the structure belongs to the class of narrow folds situated to the west of the central line of the Tertiary trough. The drilling has not, so far, been successful, and operations are suspended.

Yenanma

Yenanma is a remarkable little field which stands alone amongst the Burmese Field. It seems, on superficial examination, to consist of a pocket of oil-bearing sands situated in the midst of a group of laminated clays and sands forming a homocline (or monocline) with a steady easterly dip of 20 to 25 degrees. It is believed by some that these beds are thrust westwards over folded rocks of similar or rather earlier age and that the oil comes from a hidden anticline. However, this conception is not shared by many geologists who know Burma thoroughly well. Following along the outcrop seepages may be traced for a distance of some 40 miles on two distinct horizons, one near the base of the Peguan and the other some 2,000 or 3,000 feet lower in the higher part of the Eocene. There may, therefore, be other oil pockets below the monocline, but there would seem to be no indication whereby they can be located. Yenanma is exploited by the Indo-Burma Oilfields (1920), Ltd., and the production has been since pumping was commenced on January 12, 1922:

	Barrels
1922	54,295
1923	36,649
1924	33,854
1925	*27,000
1926	†17,000

*Approximately.
†Estimated.

Arakan Coast

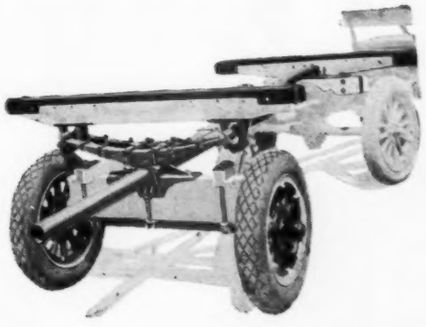
Several of the closely folded anticlines of the Arakan Coast are petroliferous, but the deposits appear to belong to a separate basin of sedimentation. The licensees at present are all natives and the oil is won by native methods, production is declining and does not now exceed 50,000 gallons annually (in 1924 it was 21,714 gallons).

De La Vergne

Four 260 H.P. De La Vergne Vertical Diesel Engines,—recently sold to Andian National Corp., for pipe line pumping, in Mamonal Sta., Colombia, S. A.

Write for Bulletins

De La Vergne Machine Company
920 East 138th St., New York, N. Y.
Also Manufacturers of Ice Making and Refrigerating Machines



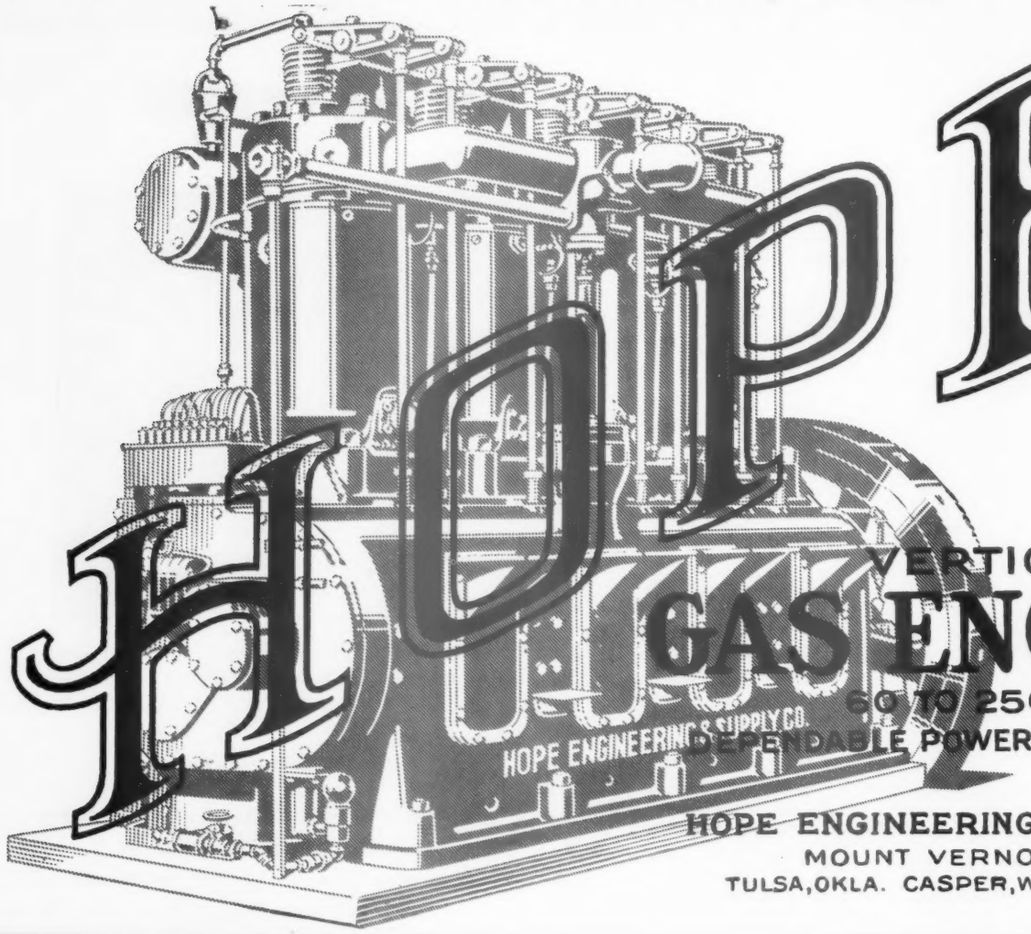
Nabors Trailers at Home

Oil men from many sections now investigating Louisiana's newest field in Sabine Parish will be delighted to learn that Nabors Trailers are manufactured only twenty miles from this field.

For in the oil fields is where Nabors Trailers strut their stuff with a vengeance.

Sold Through Authorized Truck Dealers

W. C. Nabors Co.
Mansfield, La.

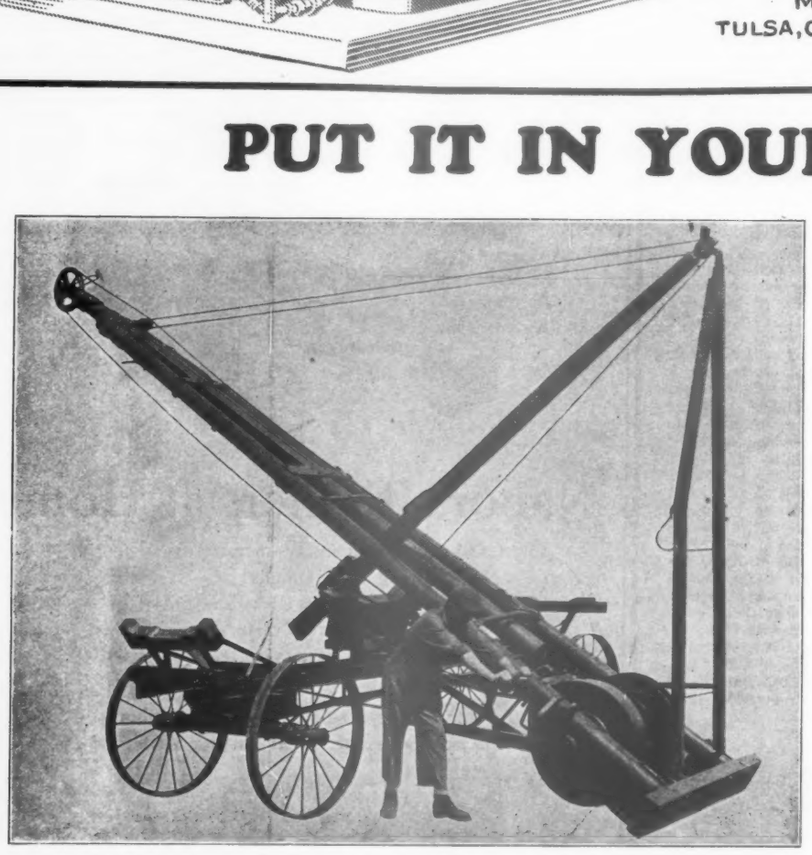


HOPE

VERTICAL
GAS ENGINES
60 TO 250 H.P.
DEPENDABLE POWER AT LOWEST COST

HOPE ENGINEERING AND SUPPLY CO.
MOUNT VERNON, OHIO.
TULSA, OKLA. CASPER, WYO. DALLAS, TEX.

PUT IT IN YOUR SOCK



Saving money is just another way of making it. You cannot save money when wells are standing idle because of needed repairs. A constant repair bill for pulling equipment eats deeply into the profits. A dropped string of rods or tubing is a "nightmare" to a pocketbook. Every operator knows that a paying lease must be kept close to its peak of production. Eliminating pulling problems is half the battle.

That's Where We Come In

The IRON KING pulling machine is built for speed, strength and durability. It's your best "hired man."

If your oil well supply store will not get you an IRON KING write us direct. *Would you like a catalog?*

The Iron King Manufacturing Co.

BRADNER OHIO

Say You Saw It in The Oil and Gas Journal

How to Get Quick Action

Hundreds of deals in Leases, Royalties, Production and Equipment of all kinds will be made in the next few weeks.

Most of those deals will be made by readers of The Oil and Gas Journal.

They represent one of the wealthiest and most progressive group of men in the world. They have an immense buying power, in addition to a strong inclination to *buy now* for 1927 activities.

The quickest way for you to get your message delivered—*just exactly as you wish oil men to receive it*—is to advertise in the Classified Wants Section of The Oil and Gas Journal.

Advertise now and you will get good results. Let the influential readers of the Classified Ads know about your property, products, or service and they will be glad to deal with you.

The price is very reasonable, 35 cents a line for the first insertion of an ad, and 25 cents a line for each following time. Six words usually make a line.

Send your ad today so that active oil men will have a chance to deal with you.

The Oil and Gas Journal
TULSA, OKLA.

DRILLING IS RESUMED IN KANE DEEP TEST

KANE, Pa., Mar. 5.—After many futile attempts to remove a bit lodged in the hole of the deep test well which is being drilled by the United Natural Gas Co. on its lease near LaMont, about 4½ miles from this city, the work was given up and drilling operations were resumed.

The drill had reached a depth of 5,402 feet when the bit was lost in the hole about three months ago. Every possible effort was made to secure it but without success. It was decided to drill by the bit which is imbedded in the wall of the hole. The work of drilling was started and a depth of 30 feet below this point was reached. To make the operation safe, the lost bit is being cemented where it lodged, and those in charge of the work think that the drilling can go on without any further hindrance.

There are three other deep test wells in northwestern Pennsylvania at present. The Fidelity Petroleum Co.'s well, on the Ulf farm near Tidioute, has succeeded in knocking the bailer down from where it was lodged at about 3,000 feet to the bottom of the hole and is now drilling up the bailer. This well had reached 5,076 feet. At the Deemer deep test well in Jefferson County a cave in has been cemented and the well is shut down for a week to allow the cement to harden.

PICTURESQUE CAREER OF FOREIGN DRILLER

CHATHAM, Ontario, Mar. 5.—A picturesque career ended on February 12, when Alfrid Forian, one of the best known drillers in foreign fields, died at Miri, Sarawak, Borneo, of malarial fever.

Forian was only 48 years old. He was born in Norway. At the age of 11 he ran away from home, beating his way to New York. He was in Dakota in 1897 when news of the gold find in the Yukon came. As a youth of 18, he joined in the famous stampede. After the gold rush he went to Vancouver where he met Thomas Ivinson of Petrolia, a Canadian driller en route to Australia. Forian accompanied him and became an expert driller.

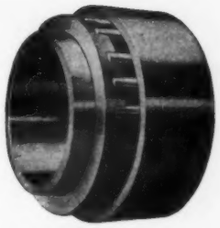
His first trip to Borneo was about 12 years ago; after he had drilled in numerous foreign fields, he was engaged by Charles Macalpine to drill in the Far Eastern Field.

O. W. KILLIAM LEASES BOUGHT BY MAGNOLIA

SAN ANTONIO, Tex., Mar. 5.—O. W. Killiam, of Laredo, Tex., who brought in the discovery Mirando well, has sold to the Magnolia Petroleum Co. leases on 5,110 acres in the southeastern part of Webb County, out of the Mariano Arispo grant, for a consideration said to be in the neighborhood of $76,000. The tracts are scattered over the southeast corner of the county and not in a solid block. They are immediately south of the new gas area being opened up south of the Cole gas field, and are in line to pick up an extension of the field. It is understood that Magnolia has contracted to furnish gas to the new gas pipe line that is to be built to the Lower Rio Grande Valley.

DEATH OF H. J. SLICKER

KNOX, Pa., Mar. 5.—H. J. Slicker, prominent oil and gas producer, died suddenly at the family home at Knox, from an apoplectic stroke. He was born in 1861 on the Slicker farm near Turkey City. He had been an oil producer since 1876. He was a prime mover in founding Alum Rock Gas Co., in 1903, and was the president of the company until its sale, February 16, 1927. He is survived by his widow, a daughter, Orpha A., three sons, Claude L., of Oil City, Pa.; Homer of Cisco, Tex., and Earnest E., of Knox.



You Can Bet

on the equipment of these manufacturers—

American Well & Prospecting Co.
Boykin Machinery & Supply Co.
Hopper Machine Co.
Latex Iron & Steel Works, Inc.
Lucey Manufacturing Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Because they use

AMERICAN
HEAVY DUTY TYPE "C"
ROLLER BEARINGS

This Cut Saves Three Operations

It's a Beaver Square-End Cut—made with a Beaver Square-End Pipe Cutter—a tool that works like a lathe, actually CUTTING pipe square, without burrs, ready for threading—and does it quicker and easier than wheel or roller cutters.

A type for every size and purpose. No. 1—cuts ⅛ to 1"; No. 5 cuts ½ to 2". No. 10 is a ratchet cutter—2½ to 4-inch. Nos. 106, 108 and 112 are geared, pinion driven cutters for hand use or with power. 106 cuts 2½ to 6"; 108 cuts 4½ to 8"; 112 cuts 9 to 12".

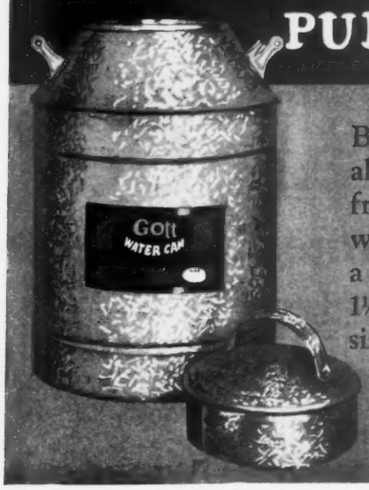
The story of these cutters is interestingly told in a special folder—as well as in the Beaver catalog. Where shall we send your copy?

THE BORDEN COMPANY
514 Dana Ave.
WARREN, OHIO

BEAVER
Money Making Pipe Tools

Gott water can the BEST

PURE WATER



Built to last—you will always be assured of a fresh supply of pure water, when you have a GOTT. Made in 1½, 3, 5 and 10 gallon sizes. Order now from your supply store.

H. P. GOTT MFG. CO.
Winfield, Kansas

"Central" Oil Country Tubular Goods

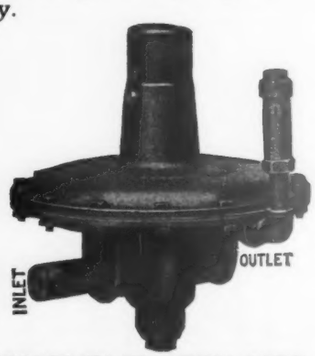
We are specialists in the manufacture of Welded Tubular products and if you want to be certain that you get the nearest approach to perfection that the latest in process and equipment can insure, be sure to specify and insist upon getting "Central" Oil Country Tubular Goods.

Central Tube Company
General Offices: First National Bank Bldg.
PITTSBURGH, PA.

Representatives in the Oil Fields
Mid-Continent: Allen, Sproull & Allen, Burk Burnett Bldg., Fort Worth, Texas
California: E. C. Saul, Monadnock Bldg., San Francisco, California
DISTRIBUTORS
Taubman Supply Corporation, Tulsa, Oklahoma, and branches
Dunigan Tool & Supply Co., Breckenridge, Texas, and branches
Putnam Supply Company, Putnam, Texas, and branches
Louisiana Iron & Supply Co., Shreveport, La., and branches
Petroleum Equipment Co., Los Angeles, California, and branches

FULTON HOUSE-SERVICE REGULATOR

Equipped with a highly efficient spring valve which automatically reduces high intake pressures to any desired degree. Its strong feature is the valve seat which our catalogue fully explains. Send for your copy today.



CHAPLIN-FULTON MFG. CO.
28-36 Penn Ave., Pittsburgh, Pa.

RECOVERING SLUDGE ACID AT REFINERIES

(Continued from Page 114)

fuel consumption but on account of the high temperatures employed losses are high and fumes are very obnoxious; also cost of repairs due to the coking up of the tower are quite high. In the vacuum system the fuel cost is very reasonable and on account of the low temperatures used in this process, acid losses are almost negligible and no fumes whatsoever are given off during concentration. Furthermore, cost of repairs are reasonable as the corrosive action of the acid greatly depends on the temperature of the acid and under vacuum these temperatures are from 100 to 200 degrees Fahrenheit lower than at atmospheric pressure.

Operating Cost

It is impossible to give average figures as the operating cost will always depend on the size of the plant and the kind of oil that has been treated but it may be stated that a refinery having 100 bbls. of sludge per day can recover the oil and acid from the sludge with a profit. On such a small scale the cost of separation will about equal the value of the recovered oil, if it is to be concentrated to 66 degrees Baume. In refineries where 60 or 61 degrees Baume acid is used for the treatment of oils, the profit derived from the recovered acid will be quite considerable as it only costs a few dollars for steam and labor to bring the acid to 61 degrees.

In order to give some concrete figures, I am giving herewith, estimated operating cost of a separating plant that will handle 200 bbls. of sludge acid per day and recover 80 bbls. of oil and 15 tons of 66 degree acid. In this case the efficiency has been figured as 60 per cent and the acid originally fed to the agitator amounts to 25 tons per day.

Cost of Separating—	
Labor	$18.00
Steam	20.00
Chemicals	5.00
Miscellaneous	7.00
Maintenance	10.00
	$60.00
Cost of Concentrating—	
Labor	$18.00
Steam	22.00
Oil	8.00
Power	7.00
Maintenance	15.00
	$70.00

The total cost is therefore $130, and allowing an overhead of about 50 per cent, would be $200. The recovered oil has a value of $80, and the acid has a value of $270—a total of $350. Deducting from this amount the total operating expenses including overhead, would leave a net profit of $150 per day which is equivalent to about $50,000 a year. In as much as a complete plant of this size would cost about $100,000, the plant should pay for itself in two years.

In a case where the acid only has to be concentrated to 61 degrees Baume, the operating cost would be reduced to $100 and the total cost to $150 including overhead. The oil has a value of $80 and the acid $200 making a total of $280. This would leave a net profit of $130 which is equivalent to $42,000, and the whole plant would pay for itself inside of 18 months as it would only cost about $70,000 to build the separating plant and concentrator for 61 degree acid.

In order to operate a separating plant at a profit it is absolutely necessary that only first class equipment is used and that particular attention is paid to maintenance and cleanliness. Handling sulphuric acid presents certain difficulties in maintenance which, however, can be overcome if each leak is taken care of as soon as it developes and there is no reason why sludge acid or any other material should be all over the ground, as one sees it quite frequently in some of the refineries.

The recovery of this waste acid is of considerable importance to the oil industry in view of the fact that from 4,000 to 5,000 tons of acid are used per day, which woud be equivalent to about 50,000 bbls. of sludge. A barrel of

K & E Steel Tapes
for *exact* measurements

GUARANTEED Accuracy and easy operation make K & E Tapes the logical ones to use. Our "Keco" *rust-resisting finish*, increases the life of the tape line.

The illustration shows our

No. 7142-T for Oil Gauger's use.

We carry tapes for gauging both *high* and *low* gravity oils.

Tape Catalog Free
Send for It Today!

KEUFFEL & ESSER CO.
NEW YORK, 127 Fulton Street, General Office and Factories, HOBOKEN, N. J.
CHICAGO 205-215 S. Wabash St. ST. LOUIS 817 Locust St. SAN FRANCISCO 35-37 Second St. MONTREAL 5 Notre Dame St. W.
Drawing Materials, Mathematical and Surveying Instruments, Measuring Tapes

The Tret-o-lite Process is RAPID!

Time required only for mixing and settling. Mixing often completed during normal flow of oil from well to tank. Settling takes only the time for normal oil and water to separate.

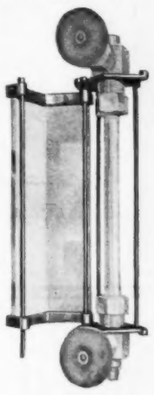
Wm. S. Barnickel & Co.
St. Louis, Mo.

endorsed-

By One Who Knows

Read what an authority in the refiner field has to say about these types of automatic gauge cocks and gauge glass shields.
The high efficiency and service rendered by these two OCKCO Products is not the result of any one feature, but the combined features of their construction as a whole.
Hundreds of endorsements prove their superiority for refinery purpose.

From Nov. 25th, 1926 issue of The Oil and Gas Journal



Safety Devices in Gasoline Plants

Automatic Gauge Cocks, Brass Screens for Burner Ports and Guards for Belt Installation Aid in Reducing Accidents

By B. F. Masten
General Engineer, Standard Gasoline Co.

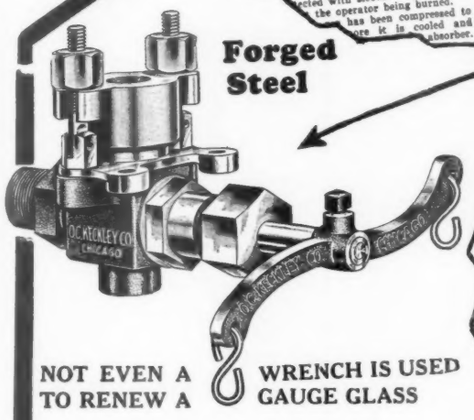
...ected with sleeves or guard rails ... the operator being burned. ... has been compressed to ... ore it is cooled and ... absorber. serious disaster. To insure against such an accident, pop valves or pressure relief valves are installed at all necessary points. Any vapors which may be discharged through these relief valves in the emergency are either returned to the gas ... dissipated to the air.
... cases absorbers are operated ... as high as 400 pounds per ... The valves on the liquid ... do not always close when ... level falls and a pressure ... the pressure on the absorber ... attend throughout the entire distribution system; therefore the necessity ... pressure relief valves.

Use Automatic Gauge Cocks

There are numerous and many gauge glasses throughout the entire plant. A gauge glass is a source of danger from many angles. Fire of an incipient nature may break a gauge glass and cause inflammable liquid to be fed to the fire thereby causing conflagration. Especially is this true where there is pressure. To reduce this danger to a minimum, nothing but automatic gauge cocks are used throughout our plants. One instance occurred where a small fire broke one gauge glass on an absorber carrying 40 pounds pressure. This absorber was one of a battery of eight; each absorber contained approximately 10 bbls. of oil and a large quantity of gas. Upon the breaking of the glass the auto gauge cocks operated and the leakage from them was so slight that very little oil or gas was fed to the fire and it was brought under control without difficulty. Without this automatic feature, the breaking of this one gauge glass would have fed sufficient fuel to the small fire to have destroyed the entire battery of ... probably the destruction of the entire plant. ... the extra ... of approximately $50,000 at ... as of saving $50,000 at ... very least. It is believed that by this one instance, our company has already been repaid for the extra expense required to equip its 28 plants with automatic gauge cocks.
There is one other serious hazard connected ... and in recognized and safety measures provided to combat it in our plants. The operator of a plant must use the gauge glass as an indicator of what is going on. As a result his eyes are in close contact with the glass many times a day. One accident occurred in which an eye was seriously injured by the breaking of a gauge glass. Now we place a one-quarter-inch mesh ... arrangement in front of it in such a manner that it ... easily removed when necessary. This may and should be done by the operating crew for its own protection. The cost is negligible but the value of the protection is beyond our power to estimate.

Open Fires

... of accidents in and about the oil fields, refineries and natural gasoline plants ... directly traced to ...



NOT EVEN A WRENCH IS USED TO RENEW A GAUGE GLASS

Write for our Bulletin No. 500 with full description, price, etc. Let us help solve your problems.

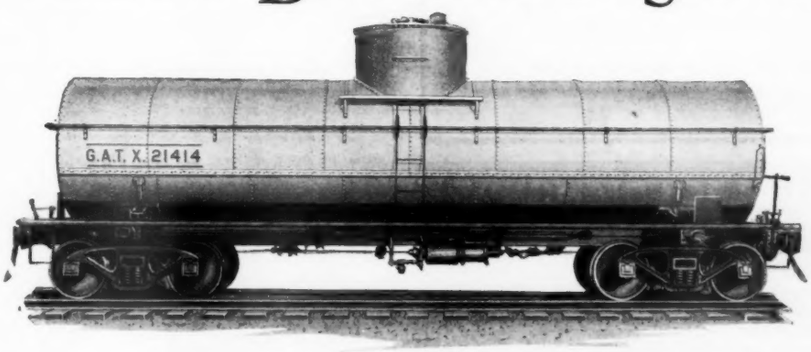
If you will analyze the construction of a OCKCO gauge, you will readily appreciate this Patented Stuffing Box with Gland and Swing Bolts that makes replacement of a broken glass on OCKCO gauges easy and quickly without the use of a wrench.

OCKCO

O. C. KECKLEY COMPANY
565 W. Washington Blvd.
Chicago

Water Gauges Gauge Glass Illuminators Gauge Glass Shields Gauge Cocks Drip Barrels

EFFICIENT DEPENDABLE SERVICE



TANK CARS *of* ALL CLASSES BUILT *and* LEASED

For the TRANSPORTATION of LIQUID COMMODITIES

GENERAL AMERICAN TANK CAR CORPORATION

General Offices: ILLINOIS MERCHANTS BANK BLDG., CHICAGO, ILL.

BRANCH OFFICES:

Eastern Offices: 17 Battery Place, New York; Munsey Building, Washington, D. C.
Midwestern Offices: 2946 Railway Exchange, St. Louis, Mo.; 502 Cosden Bldg., Tulsa, Okla.
Southern Offices: Union Indemnity Bldg., New Orleans La.; Magnolia Bldg., Dallas, Texas
Pacific Coast Office: Bartlett Bldg., Los Angeles, California

PLANTS: East Chicago, Ind. Good Hope, La. Warren, Ohio Fort Worth, Texas Sand Springs, Okla. Wichita Falls, Texas

Repairing Done and Repair Parts Carried In Stock At All Plants

McGREGOR

"The Working Barrel That Works"

Over sixty thousand now in use from Pennsylvania to Argentine and from Oklahoma to India wherever oil is produced.

No Barrel can compete with the McGregor in price and saving. It comes with the barrels, valves, valve stem all complete at a price slightly more than what the old style Barrel would cost. Pumps as fast as old style barrels that are attached to the tubing.

The only pulling done when you have a McGregor in use is the rods as the complete Barrel is fastened to the rods and comes out when they are pulled. TUBING PULLING is done away with as far as the Working Barrel is concerned. Made for all size tubing. Use "Mac" Ball and Seat.

See your dealer or write us for circular

In ordering parts refer to these letters

McGREGOR WORKING BARREL CO., Inc.
Sole Manufacturers
BRADFORD, PENNA.

United States Industrial Diamond Corporation

475 Fifth Avenue
New York

Importers of all varieties of Industrial Diamonds

Carbon (Black Diamond) and Bort (Crystalline Diamond) for Diamond Core Drilling

Best shapes and qualities always in stock.

Parcels for examination and selection will be sent on request to reliable firms.

CARBON (BLACK DIAMONDS) FOR DIAMOND CORE DRILLS

WRITE OR WIRE FOR CATALOGUE AND FULL PARTICULARS
THE DIAMOND DRILL CARBON CO.
61 PARK ROW, NEW YORK, N.Y. CABLE ADDRESS, CHEDOTAN, N.Y.

SKINNER Clamps stop leaks

Send for Catalog
M. B. SKINNER CO., 562 Washington Boulevard, CHICAGO

sludge represents a value of from 70 cents to $1, so that the total value of the sludge produced every day is from $70,000 to $100,000.

A number of substitutes have been proposed during the last few years and while they have been useful for some particular product, sulphuric acid is still the most prominent and useful chemical for the treatment of oils. Some day we will have to treat the oils coming from the vast shale deposits in Colorado and Utah and according to information received these oils require very much larger quantities of acid, and therefore acid reclaiming plants will be of even greater importance in the future.

BRITISH AMERICAN OIL REPORTS BEST YEAR

CHATHAM, Ontario, Mar. 5.—At the annual meeting of the British-American Oil Co., held at Toronto, S. R. Parsons, president of the company since its inception, retired from that office, being succeeded by A. L. Ellsworth, who had been vice president. Mr. Parsons will continue actively associated with the business as chairman of the board. The other officers elected were: C. L. Suhr, Oil City, Pa., vice president; P. W. Binns, secretary; J. C. Millar, treasurer; directors elected were: A. E. Gooderham, Toronto; H. McSweeney, Atlantic City, N. J.; George W. Allan, K. C., Winnipeg, Manitoba; Senator C. P. Beaubien, Montreal.

The financial report showed the past year to have been the best in the company's history, with satisfactory gains in the business done in both the east and the west. In the eastern division, the business had been well sustained and increased throughout the territory. In the western division, covering the prairie provinces, where for a couple of years the crops and prices, generally speaking, have been satisfactory, a largely increased volume of business was produced.

The president cited the statement of the Bureau of Mines, Ottawa, that "the average distillation curves show that the gasoline sold in Canada during 1926 was superior to that sold in the United States during July, 1926, and to the United States specifications for U. S. Motor gasoline."

The chairman announced that the initial dividend on the new stock would be at the rate of 20 cents per quarter; and that a new stock issue would be made about the middle of the year.

FOR PETROLEUM ENGINEERS

The United States Civil Service Commission announces open competitive examination for petroleum engineer, $3,800; associate petroleum engineer, $3,000; assistant petroleum engineer, $2,400; natural gas engineer, $3,800; associate natural gas engineer, $3,000; and assistant natural gas engineer, $2,400. Applications must be filed not later than March 22. There are vacancies in California, New Mexico, Oklahoma, Utah and Wyoming.

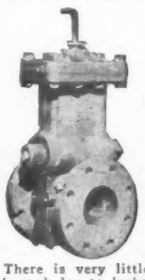
W. P. M'KEE DIES

OIL CITY, Pa., Mar. 5.—William P. McKee, aged 81 years, a veteran gauger and retired employe of the National Transit Co., died at his home in Clintonville, as the result of a stroke suffered on April 18, 1926. He entered the employ of the United Pipe Lines in 1873, and worked in Clinton Station, a relay station on the first 3-inch pipe ever used to transport oil from Troutman to Raymilton where it was loaded in tank cars. While at work on this station Mr. McKee saved the life of the chief engineer, Patrick Crowe, who had descended to the bottom of a 9,000-bbl. tank and was overcome by the fumes. When the National Transit Co. succeeded the United Pipe Lines, Mr. McKee remained in its employ and worked in various positions until retired under the pension system on January 1, 1925, with a record of 52 years of service. He was promoted

ROBINSON
Orifice Fitting

Fitting complete takes the place of all old style "hook-ups."

With this fitting there is a very appreciable saving in cost of labor and material and a marked saving in time over the old style method of installing the orifice plates. The whole device occupies no more space than an ordinary gate valve. The changing of plates is greatly simplified and the orifice is always centered in the line. Plates can be changed in 3 to 15 minutes thus assuring better metering. There is very little gas lost and no hazard due to leakage when changing plates.



There is no by-pass valve to stick open and leak, thus causing a big meter inaccuracy. The gas cannot leak by the ROBINSON FITTING.

All fittings are drilled for flange connections and are plugged when the 2½" and 8" connection is used.

Write for descriptive folder.

Robinson Orifice Fitting Co.
1435 Santa Fe Ave.,
Los Angeles, Calif.

B & A Specialty Co.,
404 West First St., Tulsa, Okla.
Westcott & Greis, Inc.,
Tulsa, Okla., and Dallas, Texas

Technical Articles Every Week

Technical and semi-technical articles covering every phase of the producing, refining and natural gasoline branches are published regularly. These articles are illustrated with designs, charts, maps, photographs, or whatever is necessary to show, more clearly, the features of the article. The Oil and Gas Journal publishes more articles of real value to the industry than all other publications combined.

Be among the best informed oil men. Read "America's Greatest Petroleum Publication" every week.

The Oil and Gas Journal
Tulsa, Okla.

We sincerely believe that a refinery equipped with

KELLOGG pipe stills,

KELLOGG-ALCORN radiant heat furnace with Carborundum boxes,

KELLOGG fractionating towers,

CROSS cracking units, and

GRAY vapor phase treating towers

will yield the greatest returns from any type of crude.

THE M. W. KELLOGG CO.
7 Dey St.,
New York City

BRANCH OFFICES:
700 Baltimore Avenue, Kansas City, Mo.
444 Market St., San Francisco, Calif.
1019 Hellman Bank Bldg., Los Angeles, Calif.

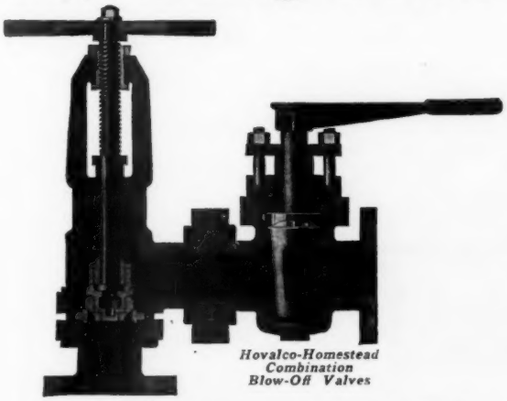
Experience gained through

34 years of making GOOD Valves

For over 34 years the Homestead Valve Manufacturing Company have been making valves—valves that meet the extreme conditions to be encountered in the Petroleum Industry.

The largest Producers, Refiners and Pipe Line Companies in the Industry are using Homestead Valves—Why . . . because they can be DEPENDED upon for low cost economical service without constant attention. Built with experience they are built right.

The Hovalco—Homestead Blow-Off Valve is a contributing factor to Homestead's reputation for quality valves. Simple, safe, convenient, this blow-off valve assures satisfactory service on boilers of every type.



Hovalco-Homestead Combination Blow-Off Valves

To operate—First—Open the Homestead Quarter-turn Valve.

Second—Open the "Hovalco" and control the flow.

Third—Close "Hovalco."

Fourth—Close Homestead—Thus you keep the Homestead Valve in good, tight condition for emergency use.

To renew or regrind the Hovalco parts, keep the Homestead closed and make the change any time. It is not necessary to close down the boiler.

Any part of the Hovalco subject to any wear can be renewed, with greater ease than any other valve made. Look closely at the construction.

Agents Everywhere—especially as follows:
F. W. Heitman Co., Houston, Texas — Smith Separator Co., Tulsa, Okla. — W. R. Ladewig Co., Los Angeles

Homestead Valve Manufacturing Company, Homestead, Pa

HOMESTEAD

PRODUCTS: Quarter Turn Valves—Straight-Way Three-Way Four-Way Types—Full Round-Way Valves—Cast Steel Refinery Valves—Lubricated Valves—Hovalco Blow-Off Valves-Protected Seat Globe Valves B & O Pat.—Protected-Seat Hydraulic Operating Valves

RYERSON

IMMEDIATE SHIPMENT FROM STOCK

Bars, Plates, Rivets, Tool Steel, Shapes, Sheets, Bolts, Welding Rods, Structurals, Tubes, Wire, Concrete Reinforcing, Rails, Pipe, Turnbuckles, Alloy Steel, Ascoloy, Small Tool, Machine Tools, etc.

Write for the Ryerson Journal and Stock List.

JOSEPH T. RYERSON & SON INC.

Chicago Detroit Milwaukee Buffalo St. Louis Cincinnati New York Cleveland Boston

Tulsa Office: 618 Atlas Life Bldg.

STEEL

Houston Office: D. S. Mair 230 Main Street

Ajax Bull Ropes

"Strength in Every Length"

AJAX ROPE COMPANY INC.

SINGER BUILDING ANNEX 90-97 LIBERTY STREET NEW YORK

E. E. D. LAWSON, President

Reg. U. S. Pat. Off.

Mid-Continent Sales Representatives:
Bisett & Brown
1007 Jones Street
Fort Worth, Texas

Warehouse Representative:
H. D. Hedrick
Tulsa Transfer & Storage Co.
Tulsa, Okla.

Ajax ropes are carried in stock by the North Texas Supply Co., Cross Plains, Tex.; Rex Supply Co., Sour Lake, Tex., and Mid-Continent Supply Co., Fort Worth, Tex.

BROWNELL BOILERS

Dependable Hi-Pressure Types

Brownells comply with A. S. M. E. and all state codes.

Correct Design
Accurately Known
Strength
Safety
Economy

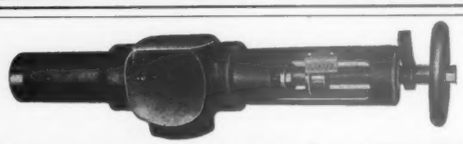
Before you decide, investigate Brownell Oil Country Line. Send for Bulletin B-7.

The BROWNELL CO.
Dayton, Ohio

Established 1855

Domestic Distributors
Dunnigan Tool & Supply Co., Inc.,
Breckenridge, Texas

Export Division
Oil Field Machinery Co.,
90 West St., New York, N. Y.



Prolongs the Life of Flowing Wells

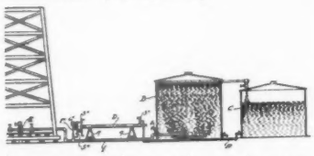
It has been found that by holding back the pressure of a flowing well, the gas flows the oil to the well with it, increases production, and greatly prolongs the flowing-life of the well. The Shaffer Adjustable Flow Bean positively controls the flow of oil and gas from flowing well in the simplest, easiest manner without disturbing the oil or gas stream. Orifice opening adjustable to 1/100-inch by hand wheel control. Full details on request.

SHAFFER TOOL WORKS
Brea, California, U. S. A.
Distributed by
Robt. N. Atmore Co., Tulsa, Okla.
Robt. J. Miller Co. Houston, Texas
Sold by Leading Supply Houses

to be gauger during the excitement attending the development of the Buffalo fields and for more than 50 years carried a gauge pole. Few men, if any, have handled and cared for more oil of the Pennsylvania grade.

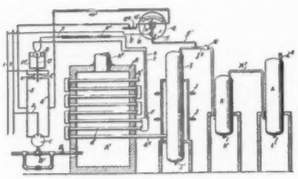
Recent Patents

1,606,685. Apparatus for Treating Cut Oil and the Like. Charles C. Averill, Wichita Falls, Tex., assignor, by mesne assignments, to Brady Process Co., St. Louis, Mo., a corporation. Filed October 24, 1923. Serial No. 670,583. One claim. (Cl. 196—4.)



An apparatus for treating crude petroleum emulsions, comprising a tank, a flow line leading from a well to said oil tank and adapted to serve as a conduit for petroleum emulsion and gases which emerge from the ground with said emulsion, an elevated container for holding a treating agent, a feed pipe for the treating agent leading from the lower end of said container to the flow line, means for utilizing the bases in the flow line to equalize the pressure in the upper portion of said container, whereby the treating agent will flow by gravity through said feed pipe into the flow line, and an oil pipe leading from said oil tank to said container for permitting oil to be mixed with the treating agent in the container.

1,615,478. Fluid-Heater Control. Foster Malic Poole, Tulsa, Okla., assignor to the Brown Instrument Co., Philadelphia, Pa., a corporation of Pennsylvania. Filed July 6, 1925. Serial No. 41,900. 6 Claims. (Cl. 196—132.)



1. The combination with an oil heater, of a heater regulator and means for automatically adjusting it to heat the oil to different temperatures as the pressure of the oil varies, comprising a device responsive to the temperature of the oil and a device responsive to the pressure of the oil.

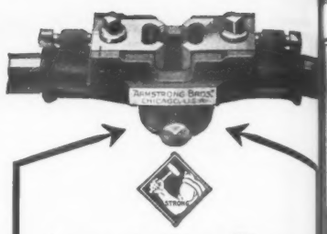
1,615,479. Oil-Distillation Apparatus. Foster Malic Poole, Tulsa, Okla., assignor to the Brown Instrument Co., Philadelphia, Pa., a corporation of Pennsylvania. Filed July 6, 1925. Serial No. 41,901. 5 Claims. (Cl. 196—132.)

1. Oil distilling apparatus comprising an oil heater having an oil inlet, an oil and vapor separator having an inlet to which said outlet is connected and having a vapor outlet, a reflux cooler for the vapors issuing through said vapor outlet, means adapted to supply oil at an approximately constant rate to said inlet oil heater comprising means for

LEGAL

TRIBAL OSAGE OIL LEASES AT PUBLIC AUCTION, MARCH 28, 1927. BY UNITED STATES GOVERNMENT.

March 28, 1927, at Pawhuska, Oklahoma, about 70,000 acres will be offered for oil leases in quarter section tracts. Bids will be for bonus in addition to royalties, 25% payable on day of sale, balance in three annual instalments, with acceptable security. Within advertised area there are about 9,826 oil wells producing from one barrel to 2,000 barrels each, the total daily production for December, 1926, being about 70,000 barrels; also, there are about 75 wells drilling. All lands are now leased separately for gas. Blue print maps of area advertised, showing tracts producing oil or gas, can be had for fifty cents each, also logs of producing oil or gas wells for twenty-five cents each well. Write U. S. Superintendent, Osage Agency, Pawhuska, Oklahoma, for maps, logs or other information.



Armstrong Bros.

ADJUSTABLE

Pipe Dies and Stocks

IMPROVED DESIGN

CUT LIKE LATHE TOOLS

Dies are Alloy Tool Steel. Chasers are backed off making them easy cutting and long lasting.

Write for free catalog

ARMSTRONG BROS. TOOL CO.
330 No. Francisco Ave., Chicago, U.S.A.

PRIMM OIL ENGINES

FOR DRILLING
PUMPING AND
PIPE LINE WORK

Hundreds are now used in the oil fields. Their satisfactory operation for years is the best recommendation to you.

—WRITE—

THE POWER MFG. CO.
722 Cheney Ave.,
MARION, OHIO

"Oil Engine Builders for a Quarter Century"

LITTLE
TIPS
TO
BIG
THINGS

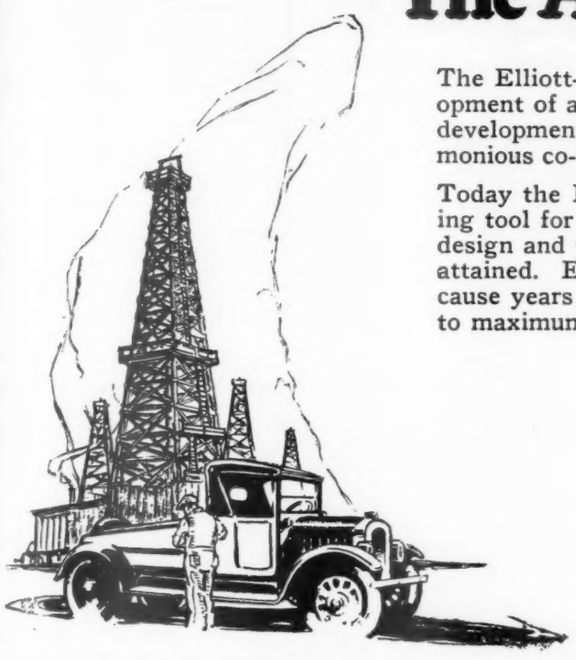
are always found in the Classified Wants Section. Read it every week. It will pay you well.

The OIL and GAS JOURNAL
Tulsa, Okla.

Original Eotvos Torsion Balances
Sold or Rented.
GEORGE STEINER
330 Houston Post-Dispatch Building,
HOUSTON, TEXAS

ELLIOTT SERVICE

The Attainment of an Ideal



The Elliott-Alco Core Drill and Elliott specialized service is the development of an idea - - the attainment of an ideal. The idea was the development and perfection of the Elliott-Alco Core Drill and its harmonious co-ordination with Elliott specialized service.

Today the Elliott-Alco Core Drill is unquestionably the one outstanding tool for the service intended. It is a perfected device of advanced design and precision manufacture, and admittedly unequalled in results attained. Elliott specialized service is a definite part of our business because years of experience have demonstrated that it is highly essential to maximum coring efficiency and results.

For successful, efficient, economical coring use the Elliott-Alco Core Drill backed by Elliott Service.

ELLIOTT CORE DRILLING CO.
850 Subway Terminal Building
LOS ANGELES, CALIFORNIA

BRANCHES:
3210 Harrisburg Blvd., Houston, Texas
618 Lake Street, Shreveport, La.
123 East 3rd Street, Tulsa, Okla.
443 Park Street, Beaumont, Texas
Ardmore, Okla.

EXPORT OFFICE:
150 Broadway, New York City

Shaffer Oil and Refining Company

Producers—Refiners—Marketers

DEEP-ROCK

This Trade Mark is your protection in buying highest quality petroleum products

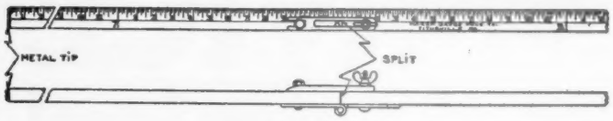
Refinery at Cushing, Okla.

Producing, Land and Pipe Line Depts.,
424 S. Cheyenne
TULSA, OKLA.

Sales Office
1018 So. Wabash Ave.,
Chicago, Ill.

GAUGE POLES

Any Length **For Oil Measurements**



"MARSH-JOINT"

For sale by oil country supply houses or furnished promptly by the factory at Titusville, Pa.

Correspondence Solicited

MARSH GAUGE POLE COMPANY
TITUSVILLE, PA.

KLEIN TONGS

as we make them are of the best material—strong and good grippers. We ask a trial to convince you that we manufacture the best tongs on the market.

The Columbus Forge & Iron Co.

Mfgrs. of Superior Forged Pipe Tongs, Oil Well Tool Wrenches, Box and Pin Forgings, Hooks, Vises, Wrought Anvils, etc.

COLUMBUS, OHIO

Refinery piping service

write!

PowerPiping

Fabrication and Erection

POWER PIPING CO., Pittsburgh, Pa.

HARRY A. CAMPBELL F. LEE STEWART

NATIONAL PETROLEUM ENGINEERING COMPANY

ENGINEERS AND GEOLOGISTS

ATLAS LIFE BUILDING

TULSA, OKLAHOMA

APPRAISALS
REPORTS, COMMERCIAL AND TAX

SURVEYS
ESTIMATES OF OIL RESERVES

MYERS PUMPS

FOR EVERY PURPOSE

We have been manufacturing Myers Pumps for Every Purpose for over fifty years—a modern plant—a daily production of three pumps and over every minute during working hours—a world-wide distribution through nearly twenty-five thousand dealers, jobbers and supply houses, indicate our responsibility as well as the quality of our products. If you are interested in pumps for any service, of either large or small capacity, write us for catalog and prices.

THE F. E. MYERS & BRO. CO. Ashland, Ohio

ASHLAND PUMP AND HAY TOOL WORKS

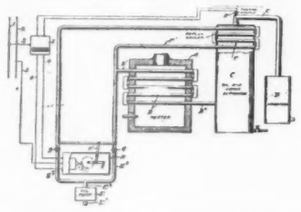
STEEL PLATE CONSTRUCTION

Steel Oil Storage Tanks, Condensers, Stills, Refinery equipment of every kind. Fabricated and Erected

RITER-CONLEY COMPANY

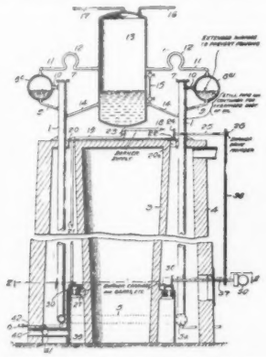
General Offices—Pittsburgh, Pa.

passing a portion of the oil supplied directly through said reflux cooler to said heater inlet, means independent of the cooler for passing the remaining portion of the oil to be heated to said heat-



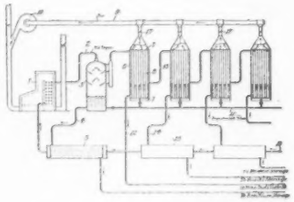
er inlet, and means automatically responsive to the vapor outlet temperature for varying the amounts of oil passing through the reflux cooler as required to maintain an approximately constant temperature in said vapor outlet.

1,615,779. Methods of Cracking Oil. Frank E. Wellman, Kansas City, Kans., assignor to the Kansas City Gasoline Co., Kansas City, Kans., a corporation of Kansas. Filed July 10, 1922. Serial No. 574,041. 1 Claim. (Cl. 196—47.)



The method of cracking hydrocarbon oil which consists in dividing the main body of oil under treatment into a plurality of connected bodies whereby the area available for the external application of heat is proportionately increased, intermittently and individually heating said separated bodies in periodic rotation whereby a degree of heat greater than could be withstood if continuously applied may be employed with destructive action, and drawing off the resultant vapors from all the bodies in common while maintaining a common liquid level with extended surface to prevent foaming in the individual bodies.

1,614,689. Oil Still. John Primrose, Dongan Hills, N. Y., assignor to Power Specialty Co., New York, N. Y., a corporation of New York. Filed April 7, 1921. Serial No. 459,234. 2 Claims. (Cl. 196—116.)



1. The process of fractional distillation herein described which consists in heating a still with products of combustion evolved in a furnace, passing from a still, the uncondensed vapors through a series of air-cooled condensers having different temperatures, recovering from each condenser the distillate resulting from the temperature, drawing cooling air through the various condensers, and returning the air which is drawn through the condensers to the furnace for promoting the combustion of the fuel burned in the furnace and used for distilling the oil to thereby usefully recover heat from the condensers.

Cables: Ceallach, New York Telephone: Whitehall 8264
JOHN EOGHAN KELLY
Consulting Engineer
17 Battery Place, New York City, N.Y.
Pasaje Coloma 6, Guatemala, C. A.
Examination, appraisal, management, negotiation of petroleum properties, mines, natural resources. Exceptional facilities in Latin America.

EDWIN B. HOPKINS
CONSULTING GEOLOGIST
25 Broadway
NEW YORK

PHILLIP MAVERICK
PETROLEUM GEOLOGIST
Telephone 93
Ricker & Dodson Bldg.
SAN ANGELO, TEXAS

BROKAW, DIXON, GARNER & McKEE
GEOLOGISTS
PETROLEUM ENGINEERS
Examinations, Appraisals
Estimates of Oil Reserves
120 Broadway New York City
Caracas, Venezuela

C. R. THOMAS
Petroleum Geologist
Tulsa, Okla.
Phone 8390 314 Clinton Bldg.

TURK & MAULDIN
ATTORNEYS AT LAW
209-214 Ritz Building
(Tom F. Carey, Income Tax Counsel)
TULSA, OKLA.

ARTHUR C. BROWN
SOLICITOR OF UNITED STATES AND FOREIGN PATENTS
406-412 KENNEDY BLDG.,
Tulsa, Okla.
Mr. Fred Krueger
in Charge
Phone 4-2319

PATENTS *Write for Free Book*
MUNN & CO.
Associated for 81 years with the Scientific American
151 Scientific American Building
24 West 40th Street, *New York City*
514 Scientific American Bldg., *Washington, D.C.*
1303 Tower Building, *Chicago, Ill.*
656 Hobart Building, *San Francisco, Cal.*
511 Van Nuys Building, *Los Angeles, Cal.*

New Ownership Map of
CIMARRON COUNTY
Paper, $7.50; Linen, $10.00
AMARILLO ABSTRACT CO.
106 W. Fifth St., Amarillo, Texas

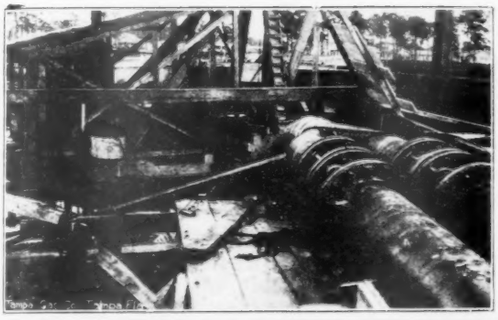
TEXAS OIL MAPS
County and District
Catalog on Application
HEYDRICK MAPPING COMPANY
Wichita Falls, Texas

Northern Oil Information Bureau
Shelby, Montana
Complete weekly drilling and operating report of Kevin-Sunburst field mailed to any address, $10 for four reports. Maps and logs for sale. Best of references.
We maintain geological, land and field departments, all in expert hands.

CHEMICAL AND MECHANICAL PROTECTION

The bond of NO-OX-ID is non-hardening. Impact will not remove it, nor does it at any age, check, crack or peel. It is not affected by soil conditions nor by severe atmospheric conditions as here illustrated in the service of the Tampa Gas Company. When properly applied, NO-OX-ID penetrates to the seat of any corrosion that may have started, inhibiting the surface against further action. NO-OX-ID and NO-OX-IDized Wrapper are easy to apply and afford long time protection.

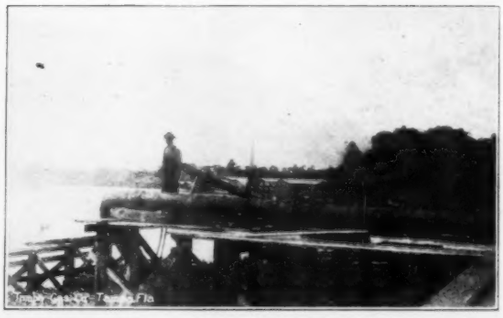
NO-OX-ID
IRON + OX = RUST
TRADE MARK
The Original Rust Preventive



Our experience embraces application in a wide range of soil, water and atmospheric conditions. Our products are serviced by experts. Consultation invited.

Dearborn Chemical Company

310 S. Michigan Ave., Chicago
299 Broadway, New York
Canadian Headquarters
2454-2464 Dundas St. West
Toronto



THE OIL INSURANCE ASSOCIATION

PROVIDES FOR REAL FIRE INSURANCE FOR THE OIL INDUSTRY

The Oil Insurance Association is in its eighth year of successful operation, with 100% performance record testifying to the dependability, thrift and speedy and complete satisfaction of its service.

OIL INSURANCE ASSOCIATION MEMBER COMPANIES

Aetna Insurance Co., Hartford Conn.
Alliance Insurance Co., Philadelphia, Pa.
Allied Underwriters Agency, Hong Kong
American Insurance Co., Newark, N. J.
American Alliance Ins. Co., New York, N. Y.
American Central Insurance Co., St. Louis, Mo.
American Eagle Fire Ins. Co., New York, N. Y.
Automobile Insurance Co., Hartford, Conn.
Ben Franklin Underwriters, Pittsburgh, Pa.
Boston Insurance Co., Boston, Mass.
Caledonian Insurance Co., Edinburg, Scotland
California Insurance Co., San Francisco, Calif.
Camden Fire Insurance Association, Camden, N. J.
Carolina Insurance Co., Wilmington, N. C.
Central States Fire Ins. Co., Wichita, Kans.
Citizens Insurance Co., St. Louis, Mo.
City of New York Insurance Co., New York, N. Y.
Columbia Insurance Co., Jersey City, N. J.
Commerce Insurance Co., Glens Falls, N. Y.
Commercial Union Assurance Co., London, Eng.
Commercial Union Fire Ins. Co., New York, N. Y.
Commonwealth Insurance Co., New York, N. Y.
Concordia Fire Insurance Co., Milwaukee, Wis.
Connecticut Fire Ins. Co., Hartford, Conn.
Constitution Underwriters, Springfield, Mass.
Continental Insurance Co., New York, N. Y.
County Fire Insurance Co., Manchester, N. H.
Eagle Star & British Dom. Ins. Co., Ltd., London, Eng.
East & West Insurance Co., New Haven, Conn.
Federal Union Insurance Co., Chicago, Ill.
Fidelity-Phenix Fire Ins., Co., New York, N. Y.
Fire & Marine Underwriters, Hartford, Conn.
Fireman's Fund Ins. Co., San Francisco, Calif.
Firemens Insurance Co., Newark, N. J.
Firemens Underwriters, Newark, N. J.
Franklin Fire Insurance Co., Philadelphia, Pa.
Girard Fire & Marine Ins. Co., Philadelphia, Pa.
Girard Underwriters, Philadelphia, Pa.
Glens Falls Insurance Co., Glens Falls, N. Y.
Great American Ins. Co., New York, N. Y.
Hanover Fire Insurance Co., New York, N. Y.
Harmonia Fire Insurance Co., Buffalo, N. Y.
Hartford Fire Insurance Co., Hartford, Conn.
Home Fire & Marine Ins. Co., San Francisco, Cal.
Home Insurance Co., New York, N. Y.
Hudson Insurance Co., New York, N. Y.
Imperial Assurance Co., New York, N. Y.
Insurance Co. of North America, Philadelphia, Pa.
Insurance Co. of State of Pennsylvania, Philadelphia, Pa.
Jersey Fire Underwriters, Newark, N. J.
Liverpool & London & Globe Ins. Co., Liverpool, Eng.
Mechanics Insurance Co., Philadelphia, Pa.
Mechanics Underwriters, Philadelphia, Pa.
Mercantile Insurance Co., New York, N. Y.
National Ben Franklin Fire Ins. Co., Pittsburgh, Pa.
National Fire Insurance Co., Hartford, Conn.
National Liberty Ins. Co. of America, New York, N. Y.
National Security Fire Ins. Co., Omaha, Neb.
Newark Fire Insurance Co., Newark, N. J.
New Hampshire Fire Ins. Co., Manchester, N. H.
New York Underwriters Ins. Co., New York, N. Y.
Niagara Fire Ins. Co., New York, N. Y.
North British & Mercantile Ins. Co., London, Eng.
Norwich Union Fire Ins., Society, Norwich, Eng.
Old Colony Ins. Co., Boston, Mass.
Palatine Insurance Co., London, Eng.
Patriotic Insurance Co. of America, New York, N. Y.
Pennsylvania Fire Ins. Co., Philadelphia, Pa.
Philadelphia Fire & Marine Ins. Co., Philadelphia, Pa.
Phoenix Assurance Co., London, Eng.
Phoenix Insurance Co., Hartford, Conn.
Providence Washington Ins. Co., Providence, R. I.
Queen Insurance Co., New York, N. Y.
Reliance Insurance Co., Philadelphia, Pa.
Rochester Dept. of Great American, New York, N. Y.
Royal Exchange Assurance Co., London, Eng.
Royal Insurance Co., Ltd., Liverpool, Eng.
Scotch Underwriters, Edinburg, Scotland
Scottish Union & National Ins. Co., Edinburg, Scotland
Security Insurance Co., New Haven, Conn.
Sentinel Fire Insurance Co., Springfield, Mass.
Springfield Fire & Marine Ins. Co., Springfield, Mass.
St. Paul Fire & Marine Ins. Co., St. Paul, Minn.
Star Insurance Co. of America, New York, N. Y.
Sun Insurance Office, London, Eng.
Svea Fire & Life Ins. Co., Gothenburg, Sweden.
Superior Fire Ins. Co., Pittsburgh, Pa.
Travelers Fire Insurance Co., Hartford, Conn.
Union Assurance Society, London, Eng.
Union Insurance Society of Canton, Hong Kong
United Firemen's Insurance Co., Philadelphia, Pa.
Urbaine Fire Ins. Co., Paris, France
Westchester Fire Ins. Co., New York, N. Y.
World Fire & Marine Ins. Co., Hartford, Conn.

Complete details of the Oil Insurance Association may be obtained from your insurance agent or broker.

AMONG THE PURPOSES FOR WHICH THE OIL INSURANCE ASSOCIATION WAS ORGANIZED ARE:

To enable oil operators to secure sufficient dependable insurance to adequately protect their interests.
To furnish property holders and those controlling oil business expert engineering and inspection service, so methods of insuring this class may be standardized, and efficient fire protective devices installed and properly maintained, thereby stabilizing the business to the point which will enable insurance companies generally to accept the class at fair cost and under equitable policy rates.
To make available the most business-like insurance arrangement for all oil companies.

OIL INSURANCE ASSOCIATION - H. M. Carmichael, Mgr. - 209 W. Jackson Blvd., Chicago

PLYMOUTH

MANILA DRILLING CABLE

for lower cost drilling

Giving that springy, live, *snap* which drives the drill bit through as nothing else will, PLYMOUTH Drilling Cables of pure Manila fiber are cutting costs at hundreds of wells. The familiar ship trade-mark is a common sight in every oil field, wherever Drilling Cable, Bull Rope, Torpedo Line, Sand Line, or Crackers are used, and where operators recognize the superior economies of long-lasting dependable Manila fiber, backed up by sturdy, honest workmanship.

MANILA DRILLING CABLE
BULL ROPE, SAND LINE
TORPEDO LINE, CRACKERS

PLYMOUTH CORDAGE CO.
North Plymouth, Mass.

OIL WELL SUPPLY COMPANY
Distributors *Stores in All Oil Fields*

Lubrite Refining Company

PETROLEUM

PRODUCTS

Refinery at East St. Louis, Ill.

Main Office
ST. LOUIS, MO.

OTHER "PENBERTHY" PRODUCTS

Ejectors
Cellar Drainers
Oil Gages
Water Gages
Oil Cups
Grease Cups, Etc.

PENBERTHY PRODUCTS

Special High Pressure Automatic Injector

Write For Catalog

Owing to the increasing demand in the oil fields for injectors to operate on higher pressures, this high pressure injector is recommended where boilers are operated at pressures to 200 pounds.

PENBERTHY INJECTOR COMPANY
Established 1886

Canadian Plant:
WINDSOR, ONT., CAN.

1260 Holden Ave.,
DETROIT, MICH.

WHAT AND WHERE TO BUY

A Classified Index of Advertisers in This Publication

For Alphabetical Index See Page 33

A

Absorption Plant Equipment—
American Radiator Co.
Braun, C. F., & Co.
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Southwestern Engineering Co. Inc.
Southwestern Engineering Corp.

Absorption Towers—
Hope Engineering & Supply Co.
Newton Process Mfg. Co.

Acetylene Apparatus—
Oxweld Acetylene Co.

Acetylene—Dissolved—
Prest-O-Lite Co., Inc.

Acetylene in Cylinders—
Prest-O-Lite Co., Inc.

Agitators—
Kaw Steel Construction Co.
Petroleum Iron Works Co.

Alloy Steel (See Steel—Alloy)—

All-Steel Drilling Rigs (See Rigs)

Aluminum Bronze Powder for Paint—
Aluminum Co. of America.

Ammonia—
Mathieson Alkali Works, Inc.

Anchor Clamps (See Clamps)—

Antimonial Leads—
Eagle-Picher Lead Co.

Apparatus—Electric—
General Electric Co.
Wagner Electric Corp.
Westinghouse Electric & Mfg. Co.

Apparatus—Motor Control—
General Electric Co.
Westinghouse Electric & Mfg. Co.

Arches—Flat Suspended—
Brady Conveyors Corp.

B

Babbitts—
Eagle-Picher Lead Co.
National Lead Co.
Ryerson, Jos. T., & Son, Inc.

Back Up Tongs (See Tongs)—

Bailers—
Oil Well Supply Co.
Spang & Co.

Ball and Seats—
Axelson Machine Co.
Hough, Charles N., Mfg. Co.
Norris Brothers, Inc.
Northrup Equipment Co.

Balls—Steel—
Strom Steel Ball Co.

Band Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch. Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.

Barrels—
Petroleum Iron Works Co.

Batteries—
National Carbon Co.

Bearings—Roller—
American Roller Bearing Co.
Timken Roller Bearing Co.

Bearings—Thrust—
Timken Roller Bearing Co.

Belting—
Bridgeport Machine Co.
Continental Supply Co.
Fenwick-Reddaway Mfg. Co.
Frick-Reid Supply Co.
Imperial Belting Co.
International Supply Co.
Murray Rubber Co.
Stanley Belting Corp.

Belting—Rubber—
Bovaird Supply Co.
Goodyear Tire & Rubber Co.
United States Rubber Co.

Bits—Disc—
U. S. Tool Co.

Bits—Fish Tail—
Federal Supply Co.
Lucey Mfg. Corp.
Pelican Well Tool & Supply Co.

Bits—Rotary Disc—
Hughes Tool Co.

Bits—Rotary Rock—
Hughes Tool Co.
Reed Roller Bit Co.

Bit Steel (See Steel—Bit)—

Bleaching Powder—
Mathieson, Alkali Works, Inc.

Blow-Off Valves (See Valves)—

Blowout Preventer—
Regan Forge & Engineering Co.
Stearns-Roger Mfg. Co.

Blowpipes—
Oxweld Acetylene Co.

Boiler Insulation—
Celite Products Co.

Boilers—Horizontal Return Tubular—
Brownell Co., The
Kewanee Boiler Co.
Vogt, Henry, Machine Co.

Boilers—Oil Country—
Bovaird & Seyfang Mfg. Co.
Bridgeport Machine Co.
Brownell Co., The
Continental Supply Co.
Donovan Boiler Works
Frick-Reid Supply Co.
International Supply Co.
Kewanee Boiler Co.
Lucey Mfg. Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Republic Supply Co.
Titusville Iron Works.

Bolted Tanks (See Tanks)—

Bolts and Nuts—
Sheffield Steel Corp.

Bolt Threading Machines—
Bignall & Keeler Mch. Works
Landis Machine Co.

Box and Pin Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

Braces—Tool—
Dunn Mfg. Co.

Brick—Fire—
Plibrico Jointless Firebrick Co.

Briquette Machines—
Porter & Co.

Bronze Valves (See Valves—Brass and Bronze)—

Buildings—Metal, Sectional (All Types)—
Austin Co.
Blaw-Knox Co.
Braden Steel & Winch Co.
Butler Mfg. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Truscon Steel Co.

Bulk Station Tanks (See Tanks)—

Bull Ropes—
Ajax Rope Co.
Columbian Rope Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Bull Wheels—Steel—
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.

Burners—Gas—
Sonner, P. J., Gas Burner Co.

Burners—Gas, Low Pressure—
Sonner, P. J., Gas Burner Co.

Burners—Oil—
Continental Supply Co.
Lientz, B. P., & Co.
Reid, Joseph, Gas Engine Co.

Bushings—Rotary Drive—
Wilson Oil Tools Corp.

C

Cable Bit Steel—
Andrews Steel Co.
Federal Supply Co.
Heppenstall Forge & Knife Co.

Cables—Drilling, Manila—
Ajax Rope Co., Inc.
Columbian Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Plymouth Cordage Co.
Wall Rope Works, Inc.

Cables—Steel—
Ajax Rope Co., Inc.
American Cable Co.
Broderick & Bascom Rope Co.
Continental Supply Co.
Frick-Reid Supply Co.
Hazard Mfg. Co.
Leschen, A., & Sons Rope Co.
Murray Tool & Supply Co.
National Supply Co.
Republic Supply Co.
Wickwire-Spencer Steel Corp.
Williamsport Wire Rope Co.

Calf Rope—
Ajax Rope Co., Inc.

Calf Wheels—Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.

Cannon—Oil Field—
Braden Steel & Winch Co.

Cans—Water—
Gott, H. P., Mfg. Co.

Capping Steel—
Andrews Steel Co.

Carbon—Black Diamond—
Diamond Drill Carbon Co.
Patrick, R. S.
United States Industrial Diamond Corp.

Cars—Tank—
American Car & Foundry Co.
General American Tank Car Corp.
Shippers' Car Line, Inc.

Cars—Tank, Leased—
American Car & Foundry Co.
North American Car Co.
Shippers' Car Line, Inc.

Casing—
Bovaird Supply Co.
Central Tube Co.
Continental Supply Co.
Emsco Derrick & Equip Co.
Jarecki Mfg. Co.
National Supply Co.
National Tube Co.
Pittsburgh Steel Products Co.
Republic Iron & Steel Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.

Casing—Wrought Iron—
Byers, A. M., & Co.
Reading Iron Co.
South Chester Tube Co.

Casing Heads—
Dresser, S. R., Mfg. Co.
Kansas City Hay Press Co.
Walworth Co.

Casing Lines—
Ajax Rope Co., Inc.
American Cable Co.
Hazard Mfg. Co.

Casing Shoes—
Baker Casing Shoe Co.
Bartlesville Supply Co.
Bridgeport Machine Co.
Guiberson Corp.
Oil Well Supply Co.
Pelican Well Tool & Supply Co.

Castings—Acid Proof—
Barber Asphalt Co.
Duriron Co.

Castings—Alloy Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Castings—Chrome Nickel Steel—
Sivyer Steel Casting Co.

Castings—Corrosion Resisting Non-Ferrous—
Hills-McCanna Co.

Castings—Electric Steel—
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.
Walworth Co.

Castings—Grey Iron—
Ajax Iron Works.
American Car & Foundry Co.
Gaso Pump & Burner Mfg. Co.
Pittsburgh Boiler & Machine Co.
Walworth Co.

Castings—Steel—
Ajax Iron Works.
Ohio Steel Foundry Co.
Sivyer Steel Casting Co.

Cement—Fire and High Temperature—
General Insulating & Mfg. Co.

Cement—Waterproofing—
Master Builders Co.
Sullivan Co.

Chains—Conveyors—
Chain Belt Co.
Link-Belt Co.

Chains—Oil Well—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.

Chains—Power Transmission—
Baldwin Chain & Mfg. Co.
Chain Belt Co.
Link-Belt Co.

Chemical Treatment Crude Oil Emulsion—
Barnickel, Wm. S., & Co.

Chlorine—Liquid—
Mathieson Alkali Works, Inc.

Circulating Heads—
Wilson Oil Tools Corp.

Clamps—Anchor—
Bartlesville Supply Co.

Clamps—Belt—
Federal Supply Co.

Clamps—Collar Leak—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Skinner, M. B., Co.

Clamps—Drilling—
Western Supply Co.

Clamps—Hoisting—
Newton Process Mfg. Co.

Clamps—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Skinner, M. B., Co.

Clamps—River—
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.

Cleaning Materials—
Oakite Products, Inc.

Clothes—Wiping—
Nye Tool & Machine Works

Clutches—Friction, Plate Type—
Twin Disc Clutch Co.

Cocks—Brass & Iron—
Lunkenheimer Co.
Merco Nordstrum Valve Co.
Walworth Co.

Cocks—Plug—
Homestead Valve Mfg. Co
Merco Nordstrum Valve Co.

Cocks—Plug, Acid Proof—
Barber Asphalt Co.
Duriron Co.

Cocks—Water Gauge—
Shaffer, J. E., Co.
Smith Separator Co.

Coils and Bends—Pipe—
Harrisburg Pipe & Pipe Bending Co.
Midwest Pipe & Supply Co.
Walworth Co.

Coke—Petroleum—
Gulf Refining Co.

Compounds—Boiler—
Dearborn Chemical Co.

Compounds—Cement, Quick Setting—
Master Builders Co.
Sullivan Co.

Compounds—Joint Sealing—
Key Boiler Equipment Co.

Compressors—Air—
Bessemer Gas Engine Co.
Clark Brothers Co.
Cooper, C. G., Co.
Gardner Governor Co.
Ingersoll-Rand Co.
Sullivan Machinery Co.

Compressors—Ammonia—
Carbondale Machine Co.
Cooper, C. & G. Co.

Compressors—Direct Connected Motor and Gas Engine Driven
Buffalo Gasolene Motor Co.
Clarke Brothers Co.
Cooper, C. & G., Co.
Miller Improved Gas Engine Co.

Compressors—Direct Driven Air and Gas—
Bessemer Gas Engine Co.
Miller Improved Gas Engine Co.

Compressors—Gas—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Cooper, C. & G., Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
National Transit Pump & Machine Co.
Worthington Pump & Machinery Corp.

Compressors—Oil—Coke—
Porter & Company.

Concrete-Hardener and Waterproofer—
Master Builders Co.
W. K. M. Company

Condenser Boxes—
Kaw Steel Construction Co.
Petroleum Iron Works Co.

Condensers—
American Radiator Co.
Chicago Pneumatic Tool Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
Wheeler Condenser & Engineering Co.

Controllers—Automatic—
Brown Instrument Co.

Controllers—Liquid Level—
Fisher Governor Co., Inc.
Newton Process Mfg. Co.
Smith Separator Co.

Controllers—Pressure—
Smith Separator Co.

Controllers—Temperature—
Taylor Instrument Co.

Conveying & Elevating Machinery
Brady Conveyors Corp.

Conveyors—Bucket and Belt—
Brady Conveyors Corp.

Conveyors—Pneumatic—
Brady Conveyors Corp.

Conveyors—Portable Belt—
Barber-Greene Co.

Cooling Towers—Atmospheric—
Braun, C. F. & Co
Wheeler Condenser & Engineering Co.

Cordage—
Bridgeport Machine Co.
International Supply Co.
Plymouth Cordage Co.

Core Drilling—
Edgyear, E. J., Co.

Core Drills—
Elliott Core Drilling Co.
W. K. M. Company

Core Drills—Diamond—
Longyear, E. J., Co.
Sullivan Machinery Co.

Core Drills—Diamonds For—(See Diamonds for Core Drilling)—

Coring Tools—
Reed Roller Bit Co.
Wilson Oil Tools Corp.

Couplings—Flexible—
Nuttall, R. D., Co.
Victaulic Co. of America.

Couplings—Plain End Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.

Couplings—Seamless Steel—
Harrisburg Pipe & Pipe Bending Co.

Couplings—Steel for Casing, Line Pipe, Drill Pipe and Tubing—
Dayton Pipe Coupling Co.
Smith, A. O., Corp.

Cracking Processes—
Gravey Corp.
Kellogg, M. W., Co.
Universal Oil Products Co.

Crawler Treads—
Belle City Mfg. Co.

Crown Blocks—
International Derrick & Equipment Co.
Lucey Mfg. Corp.
Lufkin Fdy. & Mch. Co.
Moore, Lee C., & Co., Inc.
Parkersburg Rig & Reel Co.

Cups—Composition—
Lubrikup Company

Cups—Leather—
Auer, C. A.

Cutters—Pipe—
Borden Co.
Nye Tool & Machine Works.
Trimont Mfg. Co.

Cylinders—Compressor—
Hope Engineering & Supply Co.

Cylinder Stocks—
Barnsdall Refining Co.
Pure Oil Co.
Texas Company, The.

D

Dehydrating Process—
Barnickel, Wm. S., & Co.

Dephlegmators—
Gravey Corp.
Newton Process Mfg. Co.
Smith, A. O., Corp.
Wheeler Condenser & Engineering Co.

Derricks—Steel—
Emsco Derrick & Equip. Co.
International Derrick & Equipment Co.
Marion Mch., Fdy. & Supply Co.
Moore, Lee C., & Co., Inc.
O'Brien Steel Construction Co.

Derricks—Turnbuckle—
National Turnbuckle Derrick Co.
Symonds & Henson Rig Co.

Diamonds—For Core Drilling—
Patrick, R. S.

Die Heads—Automatic Screw Cutting—
Landis Machine Co.

Die Heads—Bolt Threading—
Bignall & Keeler Mch. Works.
Landis Machine Co.

Die Heads—Stationary Pipe Threading—
Bignall & Keeler Mch. Works.
Cox & Sons Co., The.
Landis Machine Co.

Diesel Engines (See Engines)—

Dies—Pipe Threading—
Bignall & Keeler Mch. Works.
Cox & Sons Co., The.
Landis Machine Co.
Nye Tool & Machine Works.
Walworth Co.

Direct Driven Pumps (See Pumps)

Disc Bits (See Bits—Disc)—

Ditchers—Pipe Line—
Barber-Greene Co.
Buckeye Traction Ditcher Co.

Draw Works—
Lucey Mfg. Corp.
Lufkin Fdy. & Mch. Co.
National Supply Co.
Titusville Iron Works Co.

Drillers Hose (See Hose)—

Drilling & Fishing Tools—
Acme Fishing Tool Co.
Baash-Ross Tool Co.
Bovaird & Seyfang Mfg. Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Burns Tool Co.
Continental Supply Co.
Emsco Derrick & Equip. Co.
Hinderliter Tool Co.
Hughes Tool Co.
International Supply Co.
Larkin & Co.
Leidecker Tool Co.
Lucey Mfg. Corp.
Murray Tool & Supply Co.
Pelican Well Tool & Supply Co.
Oil Well Supply Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Spang & Co.
Star Drilling Machine Co.
U. S. Tool Co.
W. K. M. Company

Drilling Engines—(See Engines)—

Drilling Equipment—
Clark Brothers Co.
Hughes Tool Co.
O'Brien Steel Construction Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Star Drilling Machine Co.
W. K. M. Company

Drilling Machines—
Leidecker Tool Co.
Oil Well Supply Co.
Star Drilling Machine Co.

Drilling Tools—(See Drilling and Fishing Tools)—

Drills—Portable Air—
Chicago Pneumatic Tool Co.

Drive Shoes—
Bartlesville Supply Co.
Larkin & Co.

Drops and Seats—
Norris Brothers, Inc.

Drums (See Barrels)—

Dynamos—
Westinghouse Electric & Mfg. Co.

E

Ejectors—
Penberthy Injector Co.

Electrical Equipment—
Fairbanks-Morse & Co.
General Electric Co.
Pyle National Co.
Wico Electric Co.

Electric Drilling Equipment—
General Electric Co.
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

Electric Steel Castings (See Castings—Electric Steel)—

Elevators—Casing and Tubing—
Bovaird Supply Co.
Bridgeport Machine Co.
Dunn Mfg. Co.
Lucey Mfg. Corp.
Wilson Oil Tools Corp.

Elevators—Rod—
B. & A. Specialty Co.
D. & B. Pump & Supply Co.
Dunn Mfg. Co.

Enamels—
Arco Company, The.
Detroit Graphite Co.

Engineers—Consulting and Contracting—
Brooks Engineering Corp.
Hope Engineering & Supply Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
National Petroleum Engineering Corp.
Power Specialty Co.
Westcott & Greis.
Widdell Engineering Co.

Engineers—Fire Protection—
Brooks Engineering Corp.
Foamite-Childs Corp.

Engineers—Oil Buildings—
Austin Co
International Derrick & Equipment Co.

Engineers—Oil Treating—
Barnickel, Wm. S., & Co.

Engines—Crude Oil—
Continental Supply Co.

Engines—Diesel—
Bessemer Gas Engine Co.
Foos Gas Engine Co.
McIntosh & Seymour Corp.
Worthington Pump & Machinery Corp.

Engines—Drilling—
Ajax Iron Works.
Anderson Engine & Fdy. Co.
Bessemer Gas Engine Co.
Bovaird & Seyfang Mfg. Co.
Brownell Co., The.
Buda Co.
Buffalo Gasolene Motor Co.
Clark Bros. Co.
Climax Engineering Co.
Franklin Valveless Engine Co.
Hercules Motor Corp.
Pattin Bros. Co.
Power Mfg. Co.
Republic Supply Co.
Titusville Iron Works Co.

Engines—Gas—
Bessemer Gas Engine Co.
Buda Co.
Buffalo Gasolene Motor Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Climax Engineering Co.
Continental Supply Co.
Cooper, C. & G. Co.
Emsco Derrick & Equip. Co.
Foos Gas Engine Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hope Engineering & Supply Co.
Ingersoll-Rand Co.
International Supply Co.
Jones, S. M., Co.
Marion Mch., Fdy. & Supply Co.
Miller Improved Gas Engine Co.
National Supply Co.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Titusville Iron Works Co.
Waukesha Motor Co.

Engines—Gasoline—
Buda Co.
Buffalo Gasolene Motor Co.
Climax Engineering Co.
Continental Motors Corp.
Fairbanks-Morse & Co.
Hercules Motor Corp.
International Harvester Co. of America.
Waukesha Motor Co.

Engines—Oil—
Bessemer Gas Engine Co.
De La Vergne Machine Co.
Fairbanks-Morse & Co.
Franklin Valveless Engine Co.
Ingersoll-Rand Co.
International Harvester Co. of America.
McIntosh & Seymour Corp.
National Supply Co.
Oil Well Supply Co.
Power Mfg. Co.
Reid, Joseph, Gas Engine Co.

Engines—Semi-Diesel, Oil—
Chicago Pneumatic Tool Co.

Engines—Steam—
Ajax Iron Works.
Frick-Reid Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.

Evaporators—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

F

Fabricators for Gasoline Plants and Refineries—
Stearns-Roger Mfg. Co.

Fasteners—Belt—
Crescent Belt Fastener Co.

Filters—Oil—
Burt Mfg. Co.

Fire Extinguishers—
Foamite-Childs Corp.

Fire Extinguishers—Recharge Service—
Foamite-Childs Corp.

Fishing Tools (See Drilling and Fishing Tools)—

Fittings—Dropped Forged Steel—
Vogt, Henry, Machine Co.

Fittings—Forged Steel—
Central Forging Co.

Fittings—Malleable & Cast Iron—
Bovaird Supply Co.
Crane Co.
Frick-Reid Supply Co.
Walworth Co.

Fittings—Pipe—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Kennedy Valve Mfg. Co.
Metric Metal Works.
Oil Well Supply Co.
Reading Steel Casting Co.
Republic Supply Co.
United Iron Works, Inc.
Victaulic Co. of America.
Walworth Co.

Fittings—Pipe Acid Proof—
Barber Asphalt Co.
Duriron Company.

Fittings—Steel—
Dayton Pipe Coupling Co.
Kerotest Mfg. Co.
Ohio Steel Foundry Co.
Walworth Co.

Flanges—Brass, Iron and Steel—
Jefferson Union Co.
Metric Metal Works.
Walworth Co.

Flange Unions—
Dart, E. M., Mfg. Co.
Gaso Pump & Burner Mfg. Co.
Walworth Co.

Flashlights—
National Carbon Co.

Floating Roofs and Decks—
Chicago Bridge & Iron Works.
Gallagher Co.

Floodlights—
Pyle-National Co.

Forging Billets—
Andrews Steel Co.
Harrisburg Pipe & Pipe Bending Co.
Happenstall Forge & Knife Co.

Forging—
Champion Machine & Forging Co.

Fuel Oil (See Oil—Fuel)—

Fullers Earth—
Sinclair Refining Co.

G

Gas Holders—
Chicago Bridge & Iron Works.

Gaskets—
McCord Radiator & Mfg. Co.

Gaskets—Fibre—
Garlock Packing Co.

Gas Masks & Safety Appliances—
Mines Safety Appliance Co.

Gasoline—
Crown Central Petroleum Co.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.

Gasoline—Natural—
Chestnut & Smith Corp.
Warren Petroleum Co.

Gasoline Plant Equipment—
Bessemer Gas Engine Co.
Clark Brothers Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.
Widdell Engineering Co.

Gas Regulating Casinghead—
Davis, G. M., Regulator Co.

Gas Scrubbers—
Newton Process Mfg. Co.

Gauge Poles—
Marsh Gauge Pole Co.

Gauges—Automatic Tank—
Brooks Engineering Co.

Gauges—Draft—
Brown Instrument Co.

Gauges—Oil—
Penberthy Injector Co.

Gauges—Pressure and Vacuum—
Bristol Co.
Brown Instrument Co.
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.

Gauges—Test—
Equitable Meter & Mfg. Co.
Metric Metal Works.

Gear Driven Pumps (See Pumps)

Gears—Cut—
Nuttall, R. D., & Co.

Gears—Reduction—
Emsco Derrick & Equip. Co.
Nuttall, R. D., & Co.

Gears—Reverse—
Emsco Derrick & Equip. Co.

Generators—Electric—
Westinghouse Electric & Mfg. Co.
Lincoln Electric Co.

Generators—Acetylene—
Oxweld Acetylene Co.

Generators—Turbine—
Moon Manufacturing Co.
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Governors—
Equitable Meter & Mfg. Co.
Gardner Governor Co.

Governors—Boiler Feed—
Chaplin-Fulton Mfg. Co.
Fisher Governor Co.

Grating—Steel—
Blaw-Knox Co.

Grey Iron Castings (See Castings)

H

Hammers—Chipping and Calking Pneumatic—
Chicago Pneumatic Tool Co.

Hammers—Riveting Pneumatic—
Chicago Pneumatic Tool Co.

Hangers—Iron and Steel —
Continental Supply Co.
Dodge Mfg. Corp.

Hangers—Tubing—
Hercules Tool Co.

Hatches—Gauge and Thief—
Oil Conservation Engineering Co.

Heat Exchangers—
Carbondale Machine Co.
Griscom-Russell Co.
Hope Engineering & Supply Co.
Newton Process Mfg. Co.
Ross Heater & Mfg. Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
Wheeler Condenser & Engineering Co.

Heat Interchangers—Fluid—
Braun, C. F., & Co.
Ross Heater & Mfg. Co., Inc.
Wheeler Condenser & Engineering Co.

Hoists—Pneumatic, Geared and Universal—
Chisholm-Moore Mfg. Co.
Yale & Towne Mfg. Co.

Hoists—Portable—
Chisholm-Moore Mfg. Co.
Ford Chain Block Co.
Lufkin Fdy. & Mch. Co.
Sullivan Machinery Co.
Wright Mfg. Co.
Yale & Towne Mfg. Co.

Hooks for Rods and Tubing—
S. & A. Specialty Co.
Dunn Mfg. Co.

Hose—
Fenwick-Reddaway Mfg. Co.

Hose—Drillers—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Oil Suction and Discharge—
Goodrich, B. F., Rubber Co.
United States Rubber Co.

Hose—Rubber—
Goodyear Tire & Rubber Co.
United States Rubber Co.

Hypochlorite of Lime—
Mathieson Alkali Works, Inc.

I

Injectors—
Penberthy Injector Co.

Inspectors—Pipe—
Hunt, Robert W., Co.

Insulation Materials—
General Insulating & Mfg. Co.
Johns-Manville Corp.

Insurance—Fire—
Oil Insurance Association.

Insurance—Tornado—
Oil Insurance Association

Iron—Ingot—
American Rolling Mill Co.

J

Jacks—Hydraulic —
Bridgeport Machine Co.

Jacks—Lifting—
Templeton, Kenly & Co., Ltd.

Jacks—Pumping—
American Mfg. Co. of Texas.
American Well Works.
Bessemer Gas Engine Co.
Frick-Reid Supply Co.
Jensen Bros. Mfg. Co., Inc.
Jones, S. M., Co.
Kansas City Hay Press Co.
Norris, W. C.
Oil Well Accessories Co.
Spang & Co.

Jars—
Bridgeport Machine Co.
Spang & Co.

Jar Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.

K

Kerosene—
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.

L

Lacquers—
Arco Company, The.

Lanterns—Electric—
Delta Electric Co.

Lead and Mixed Metal Products—
Eagle Picher Lead Co.
National Lead Co.

Lead in Oil—
Eagle-Picher Lead Co.
National Lead Co.

Lead Wool and Containers—
Eagle-Picher Lead Co.

Lighting Equipment—
Pyle-National Co.
Westinghouse Electric & Mfg. Co.

Litharge—
Eagle-Picher Lead Co.
National Lead Co.

Loaders—Trucks—
Barber-Greene Co.

Long Distance Telephone—
American Telephone & Telegraph Co.

Lubricating Devices—
McCord Radiator & Mfg. Co.

Lubricators—
Ajax Iron Works.
Lunkenheimer Co.

Lubricators—Force Feed—
Hills-McCanna Co.
McCord Radiator & Mfg. Co.
Manzel Brothers Co.

M

Machine Tools—
Ryerson, Jos. T., & Son, Inc.

Manholes—Tanks—
Brooks Engineering Corp.

Manifolds—
Reid, Joseph, Gas Engine Co.

Metal—Non-Ferrous—
Haynes-Stellite Co.

Meters—Boiler Performance—
Brown Instrument Co.

Meters—Gas—
Equitable Meter & Mfg. Co.
Foxboro Co., Inc.
Metric Metal Works.
Pittsburgh Meter Co.
Roots, P. H. & F. M., Co.
Westcott & Greis.

Meters—Electric—
Brown Instrument Co.

Meters—Gasoline—
Pittsburgh Meter Co.

Meters—Oil —
Pittsburgh Meter Co.

Molded Goods—Rubber—
Garlock Packing Co.
Goodyear Tire & Rubber Co.

Motors—Electric—
Fairbanks-Morse & Co.
General Electric Co.
Lincoln Electric Co.
Westinghouse Electric & Mfg. Co.

Motors—Gasoline (See Engines—Gasoline)—

Mud Flumes—Bolted Steel—
Gallagher Co.

N

Naphtha—
Pure Oil Co.

Natural Gasoline (See Gasoline—Natural)—

Natural Gasoline Plant Equipments—
Campbell, J. A.
Cooper, C. & G., Co.
Griscom-Russell Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Westcott & Greis

Nitrogen—
Linde Air Products Co.

Nozzles—Spray—
Power Plant Equipment Co.

O

Oil and Gas Pipeline Construction—
Hope Engineering & Supply Co.

Oil Burners (See Burners—Oil)—

Oil Field Equipment—
Baker Casing Shoe Co.
Bridgeport Machine Co.
Gaso Pump & Burner Mfg. Co.
Haynes Stellite Co.
International Derrick & Equipment Co.
Iron King Mfg. Co.
Kast Steel Construction Co.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Reed Roller Bit Co.
Regan Forge & Engineering Co.
Reid, Joseph, Gas Engine Co.
Republic Supply Co.
Trumble Gas Trap Co.
W. K. M. Company

Oil—Fuel—
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Gas—
Crown Central Petroleum Co.
Gulf Refining Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil—Lubricating—
Barnsdall Refining Co.
Crown Central Petroleum Corp.
Empire Refineries, Inc.
Gulf Refining Co.
Humble Oil & Refining Co.
Magnolia Petroleum Co.
Pure Oil Co.
Sinclair Refining Co.
Texas Company, The.

Oil Tractor—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.

Oiling Devices —
Lunkenheimer Co.

Oil Meters (See Meters)—

Oil Piping Equipment (See Fittings)—

Oil Reclaiming Process—
Barnickel, William S., & Co.

Oil Well Cementing—
Halliburton Oil Well Cementing Co.

Oil Well Tools—
D. & B. Pump & Supply Co.
Hinderliter Tool Co.
Reed Roller Bit Co.
Titusville Forge Co.
U. S. Tool Co.

Over Shots—
Reed Roller Bit Co.
Regan Forge & Engineering Co.

Oxygen—
Linde Air Products Co.

P

Packer Release—
Acme Fishing Tool Co.

Packers—
Goodyear Tire & Rubber Co.
Guiberson Corp.
Larkin & Co.
Layne & Bowler Co.
Oil Well Supply Co.
Regan Forge & Engineering Co.
Spang & Co.
United States Rubber Co.

Packing—
Crane Packing Co.
Goodrich, B. F., Rubber Co.
Imperial Belting Co.
Johns-Manville Corp.

Packing—Metallic—
Crane Packing Co.
Garlock Packing Co.

Paints—
Aluminum Co. of America.
American Asphalt Paint Co.
Arco Company, The.
Detroit Graphite Co.
Dixon, Joseph, Crucible Co.
Du Pont de Nemours, E. I. & Co., Inc.
Eagle-Picher Lead Co.
Eclipse Paint & Mfg. Co.
Hill, Hubbell & Co.
Lucas, John & Co., Inc.
National Lead Co.

Pipe—Cast Iron—
Greenspon's, Jos., Sons Iron & Steel Co.
International Supply Co.
U. S. Cast Iron Pipe & Fdy. Co.

Pipe—Lead Chemical and Antimonial—
Eagle-Picher Lead Co.
National Lead Co.

Pipe—Steel—
Allegheny Steel Co.
Central Tube Co.
Continental Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Jarecki Mfg. Co.
Kellogg, M. W., Co.
Murray Tool & Supply Co.
National Supply Co.
National Tube Co.
Republic Iron & Steel Co.
Ryerson, Jos. T., & Sons, Inc.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Taubman Supply Corp.
Wheeling Steel Corp.

Pipe—Wrought Iron—
Byers, A. M., Co.
Frick-Reid Supply Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Oil Well Supply Co.
Reading Iron Co.
South Chester Tube Co.
Taubman Supply Corp.

Pipe and Nipple Threading Machines—
Bignall & Keeler Mch. Works.
Cox & Sons Co., The.
Landis Machine Co.
Ryerson, Jos. T., & Sons, Inc.

Pipe Clamps (See Clamps—Pipe)

Pipe Cleaning Machines—
W. K. M. Company

Pipe Grips—
Larkin & Co.

Pipe Headers—
National Tube Co.
Newton Process Mfg. Co.

Pipe Line Coatings—
Hill, Hubbell & Co.

Pipe Line Construction Tools—
National Transit Pump & Machine Co.
W. K. M. Company

Pipe Line Equipment—
Gaso Pump & Burner Mfg. Co.

Pipe Screwing Machines—
Buckeye Traction Ditcher Co.

Pipe Suspension Device—
Stearns-Roger Mfg. Co.

Pipe Threaders—Power—
Bignall & Keeler Mch. Works.
Williams Tool Corp.

Pipe Tools—
Armstrong Brothers Tool Co.
Nye Tool & Machine Works.
Ridge Tool Co.
Walworth Co.

Piping Fabricated—
Midwest Piping & Supply Co.

Piping—Hard Rubber—
United States Rubber Co.

Piping—Steel and Iron—
Crane Co.
Greenspon's, Jos., Sons Iron & Steel Co.
Power Piping Co.

Pistons—
Guiberson Corp.
Heppenstall Forge & Knife Co.

Pistons—Expansion—
Wilson Oil Tools Corp.

Pistons—Slush Pump—
Guiberson Corp.

Plugs—Bottom Water—
Guiberson Corp.

Potention Meters—Portable—
Brown Instrument Co.

Powermaker—Electric Plant—
Cook Motor Co.

Pre-Heaters—
Newton Process Mfg. Co.
Ross Heater & Mfg. Co., Inc.

Preservatives—Asphalt—
American Asphalt Paint Co.

Pulleys—Wood, Iron and Steel—
Continental Supply Co.
Dodge Mfg. Co.

Pulling Machines—
Iron King Mfg. Co.
National Supply Co.
Rock Island Plow Co.
Safety Pulling Machine Co.

Pumpers—Long Stroke—
Oil Well Accessories Co.

Pumping and Pulling Motors—Electric—
General Electric Co.
Westinghouse Electric & Mfg. Co.

Pumping Equipment—
American Well Works.
Axelson Machine Co.
Byron Jackson Pump Mfg. Co., Inc.
D. & B. Pump & Supply Co.
Goulds Pumps, Inc.
Jones, S. M., Co.
Myers, F. E. & Bro. Co.
Norris Brothers, Inc.
Northrup Equipment Co.
Oil Well Supply Co.
Prescott Co.
Ratigan, J. P., Co.
Waukesha Motor Co.
W. K. M. Company

Pumping Gear Units—
Nuttall, R. D., & Co.

Pumping Powers—
Bessemer Gas Engine Co.
Buda Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
Kansas City Hay Press Co.
Marion Mch., Fdy. & Supply Co.
National Supply Co.
Oil Well Supply Co.
Pattin Bros. Co.
Reid, Joseph, Gas Engine Co.
Spence Machine Co.
Titusville Iron Works Co.

Pumping Units—
Lufkin Fdy. & Mch. Co.

Pumps—Acid Proof—
Duriron Company.

Pumps—Boiler Feed—
Ajax Iron Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Gardner Pumps, Inc.
Goulds Pumps, Inc.
Oil Well Supply Co.
Smith Separator Co.

Pumps—Centrifugal—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Fairbanks-Morse & Co.
Goulds Pumps, Inc.
Smith Separator Co.
Worthington Pump & Machinery Corp.

Pumps—Direct Driven —
Bessemer Gas Engine Co.
Smith Separator Co.

Pumps—Electric—
Prescott Co.
Smith Separator Co.

Pumps—Fuel Oil Service —
Blackmer Pump Co.
Goulds Pumps, Inc.
Northrup Fire Apparatus Co.
Smith Separator Co.

Pumps—Fuel Oil Transfer—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.

Pumps—Gasoline and Oil for Filling Stations—
Gilbert & Barker Mfg. Co.

Pumps—Gear Driven—
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
Prescott Co.
Smith Separator Co.

Pumps—Hot Oil—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Goulds Pumps, Inc.
Smith Separator Co.
Pumps—Pipe Line—
Byron Jackson Pump Mfg. Co., Inc.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Prescott Co.
Worthington Pump & Machinery Corp.
Pumps—Portable—
Gaso Pump & Burner Mfg. Co.
Pumps—Power—
Fairbanks-Morse & Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Myers, F. E., Bro. & Co.
National Transit Pump & Machine Co.
Presscot Co.
Smith Separator Co.
Waukesha Motor Co.
Pumps—Refinery—
Blackmer Pump Co.
Byron Jackson Pump Mfg. Co., Inc.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
National Transit Pump & Machine Co.
Northern Fire Apparatus Co.
Smith Separator Co.
Pumps—Rotary—
Blackmer Pump Co.
Goulds Pumps, Inc.
National Fire Apparatus Co.
Roots, P. H. & F. M., Co.
Pumps—Sand—
Bridgeport Machine Co.
Larkin & Co.
Smith Separator Co.
Pumps—Slush—
Gardner Governor Co.
Pumps—Steam—
Fairbanks-Morse & Co.
Frick-Reid Supply Co.
Gardner Governor Co.
Gaso Pump & Burner Mfg. Co.
Lucey Mfg. Corp.
National Transit Pump & Machine Co.
Oil Well Supply Co.
Prescott Co.
Smith Separator Co.
Pumps—Suction—
Gaso Pump & Burner Mfg. Co.
Pumps—Vacuum—
Bessemer Gas Engine Co.
Chicago Pneumatic Tool Co.
Clark Brothers Co.
Gaso Pump & Burner Mfg. Co.
Miller Improved Gas Engine Co.
Roots, P. H. & F. M., Co.
Ross Heater & Mfg. Co., Inc.
Smith Separator Co.
Wheeler Condenser & Engineering Co.
Pumps—Water—
American Well Works.
Byron Jackson Pump Mfg. Co., Inc.
Gaso Pump & Burner Mfg. Co.
Goulds Pumps, Inc.
Northern Fire Apparatus Co.
Prescott Co.
Smith Separator Co.
Pyrometers—
Brown Instrument Co.
Pyrometer Thermocouples—
Brown Instrument Co.

R

Ratchet Pipe Cutters—
Toledo Pipe Threading Machine Co.
Ratchet Pipe Threaders—
Nye Tool & Machine Works
Toledo Pipe Threading Machine Co.
Ratchet Reamers—
Nye Tool & Machine Works.
Ratchet Stocks and Dies—
Nye Tool & Machine Works.
Toledo Pipe Threading Machine Co.
Receiving Boxes—
Reid, Joseph, Gas Engine Co.
Recorders—Differential Pressure—
Equitable Meter & Mfg. Co.
Metric Metal Works.
Pittsburgh Meter Co.
Refinery Equipment—
American Radiator Co.
Biggs Boiler Works Co.
Blaw-Knox Co.
Braun, C. F., & Co.
Carbondale Machine Co.
Chicago Bridge & Iron Works.
Graver Corp.
Griscom-Russell Co.
Kellogg, M. W., Co.
Leader Iron Works
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Appliance Co.
Petroleum Iron Works Co.
Power Piping Co.
Power Specialty Co.
Reid, Joseph, Gas Engine Co.
Ross Heater & Mfg. Co., Inc.
Ross Meehan Foundries.
Smith, A. O., Corp.
Smith Separator Co.
Southwestern Engineering Co., Inc.
Southwestern Engineering Corp.
United Iron Works, Inc.
Universal Oil Products Co.
Vogt, Henry, Machine Co.
Walsh & Weidner Boiler Co.
Westcott & Greis.
Widdell Engineering Co.
Refrigerating Machinery—
Carbondale Machine Co.
United Iron Works, Inc.
Vogt, Henry, Machine Co.
Regulators—
Brown Instrument Co.
Fisher Governor Co.
Gilfillan Machine Works.
Smith Separator Co.
Regulators—Gas—
Chaplin-Fulton Mfg. Co.
Davis, G. M., Regulator Co.
Equitable Meter & Mfg. Co.
Fisher Governor Co.
Metric Metal Works.
Smith Separator Co.
Rental—Service—
Bridgeport Machine Co.
Reversible Clutches—
Bessemer Gas Engine Co.
Rig Irons —
International Supply Co.
Lucey Mfg. Corp.
National Supply Co.
Oil Well Supply Co.
Parkersburg Rig & Reel Co.
Rigs—Drilling, All Steel—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Symonds & Henson Rig Co.
Rigs—Portable Drilling—
National Supply Co.
National Turnbuckle Derrick Co.
Star Drilling Machine Co.
Rods—Polish—
Jones, S. M., Co.
Rods—Pull—
Axelson Machine Co.
Jones, S. M., Co.
Sheffield Steel Corp.
Rods—Sucker—
Axelson Machine Co.
D. & B. Pump & Supply Co.
Frick-Reid Supply Co.
Jones, S. M., Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Sheffield Steel Corp.
Rods—Valve—
Jones, S. M., Co.
Roofing Asbestos—
Johns-Manville Corp.
Roofing—Galvanized Iron—
American Rolling Mill Co.
Roofing—Rust Resisting—
Allegheny Steel Co.
Rope Socket Metal—
Eagle-Picher Lead Co.
Rope—Manila—
Ajax Rope Co., Inc.
Bovaird Supply Co.
Republic Supply Co.
Rope—Wire—
Ajax Rope Co., Inc.
American Cable Co.
Bovaird Supply Co.
Bridgeport Machine Co.
Broderick & Bascom Rope Co.
International Supply Co.
Jarecki Mfg. Co.
Wickwire Spencer Steel Corp.
Leschen, A., & Sons. Rope Co.
Williamsport Wire Rope Co.
Rotary Bit Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.
Rotary Drilling Equipment—
Emsco Derrick & Equip. Co.
Frick-Reid Supply Co.
International Derrick & Equipment Co.
Link-Belt Co.
Lucey Mfg. Co.
Lufkin Fdy. & Mch. Co.
National Supply Co.
Oil Well Supply Co.
Republic Supply Co.
Titusville Iron Works Co.
Rotary Lines (See Rope—Wire)—
Rotary Post—
Reed Roller Bit Co.
Rotary Tool Joints—
Bartlesville Supply Co.
Hughes Tool Co.
W. K. M. Company
Rust Preventatives—
Dearborn Chemical Co.
Eagle-Picher Lead Co.

S

Sand Lines—Manila—
Ajax Rope Co., Inc.
Plymouth Cordage Co.
Sand Lines—Wire—
Ajax Rope Co., Inc.
American Cable Co.
Broderick & Bascom Rope Co.
Hazard Mfg. Co.
Wickwire Spencer Steel Corp.
Screens—Oil Well—
Layne & Bowler Co.
Screens—Water Well—
Layne & Bowler Co.
Screws Temper—
Burns Tool Co.
Securities—Oil—
Pforzheimer, Carl H., & Co.
Separators—Centrifugal—
Miller, Max B., & Co.
Separators—Gas and Oil—
Smith Separator Co.
Separators—Steam—
Vols Engineering Equipment Co.
Sheet Lead—Chemical and Antimonial—
Eagle-Picher Lead Co.
Sheets—Corrugated, Black and Galvanized—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Ryerson, Jos. T., & Son, Inc.
Sheets—Iron—
American Rolling Mill Co.
Sheets—Steel—
American Rolling Mill Co.
American Sheet & Tin Plate Co.
Sheffield Steel Corp.
Shingles—Asbestos—
Johns-Manville Corp.
Siding—Galvanized Iron—
American Rolling Mill Co.
Sleeves—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Sleeves—Split—
Dayton Pipe Coupling Co.
Dresser, S. R., Mfg. Co.
Smoke Stacks—
Donovan Boiler Works
Sockets—
Acme Fishing Tool Co.
Bridgeport Machine Co.
Spang & Co.
Sockets—Sucker Rod—
Gulberson Corp.
Soda Ash—
Mathieson Alkali Works, Inc.
Soda—Caustic—
Mathieson Alkali Works, Inc.
Solders—Bar and Wire—
Eagle-Picher Lead Co.
Hoyt Metal Co.
Spears—
Acme Fishing Tool Co.
Sprockets—Power Transmission—
Ajax Iron Works
Chain Belt Co.
Stands—Vise—
Nye Tool & Machine Works
Steel—All Kinds—
Ryerson, Jos. T., & Son, Inc.
Steel—Alloy—
Central Alloy Steel Co.
Timken Roller Bearing Co.
Steel—Bit—
Central Alloy Steel Co.
Steel—Hot Rolled Strip—
Central Alloy Steel Co.
Steel—Special—
Andrews Steel Co.
Central Alloy Steel Co.
Steel—Stainless—
Allegheny Steel Co.
Steel Fabricators—Structural—
Austin Co.
Braden Steel & Winch Co.
Graver Corp.
International Derrick & Equipment Co.
Steel Pitmans—
International Derrick & Equipment Co.
Moore, Lee C., & Co., Inc.
Steel Plate Construction—
Chicago Bridge & Iron Works
Graver Corp.
Kaw Steel Construction Co.
Leader Iron Works
Petroleum Iron Works Co.
Vogt, Henry, Machine Co.
Steel Wheel and Tug Rims—
International Derrick & Equipment Co.
Still Insulation—
Celite Products Co.
Stills—
Biggs Boiler Works Co.
Blaw-Knox Co.
Graver Corp.
Kaw Steel Construction Co.
Kellogg, M. W., Co.
McKee, Arthur G., & Co.
Newton Process Mfg. Co.
Petroleum Iron Works Co.
Smith, A. O., Corp.
Vogt, Henry, Machine Co.
Widdell Engineering Co.
Stocks and Dies—
Borden Co.
Nye Tool & Machine Works
Toledo Pipe Threading Machine Co.
Stuffing Boxes—
Axelson Machine Co.
Kansas City Hay Press Co.
Sulphuric Acid—
Eagle-Picher Lead Co.
Superheaters—Steam—
Power Plant Equipment Co.
Swabs—
Burt Corporation.
Gulberson Corp.
W. K. M. Company
Swedge Nipples—
Dresser, S. R., Mfg. Co.
Harrisburg Pipe & Pipe Bending Co.
Swing Line Equipment—
Brooks Engineering Corp.
Swivels—
Layne & Bowler Co.
Lucey Mfg. Corp.
Titusville Iron Works Co.

T

Tachometers—
Brown Instrument Co.
Tank Equipment—
Brooks Engineering Corp.
Oil Conservation Engineering Co.
Tank Insulation—
Celite Products Co.
Tanks—Bolted—
Butler Mfg. Co.
Columbian Steel Tank Co.
Gallagher Co.
Maloney Tank Mfg. Co.
Parkersburg Rig & Reel Co.
Tanks—Bulk Station—
Butler Mfg. Co.
Graver Corp.
Leader Iron Works
Tanks—Cylindrical—
Graver Corp.
Petroleum Iron Works Co.
Tanks—Elevated Steel—
Chicago Bridge & Iron Works
Graver Corp.
Pittsburgh Des Moines Steel Co.
Tanks—Field Storage—
American Car & Foundry Co.
Biggs Boiler Works Co.
Chicago Bridge & Iron Works
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Kewanee Boiler Co.
Maloney Tank Mfg. Co.
Petroleum Iron Works Co.
Pittsburgh-Des Moines Steel Co.
Riter-Conley Co.
United Iron Works, Inc.
Tanks—Horizontal Storage—
Graver Corp.
Kaw Steel Construction Co.
Maloney Tank Mfg. Co.
Pittsburgh Des Moines Steel Co.
Tanks—Run Down—
Chicago Bridge & Iron Works
Donovan Boiler Works
Graver Corp.
Kaw Steel Construction Co.
Newton Process Mfg. Co.
Pittsburgh Des Moines Steel Co.
Tanks—Truck—
Butler Mfg. Co.
Columbian Steel Tank Co.
Leader Iron Works
Tanks—Underground—
Butler Mfg. Co.
Gilbert & Barker Mfg. Co.
Graver Corp.
Kewanee Boiler Co.
Tanks—Welded—
Chicago Bridge & Iron Works
Graver Corp.
Taper Taps—
Hughes Tool Co.
Tapes—Measuring for Oil Gauging—
Lufkin Rule Co.
States Engineering Co.
W. K. M. Company
Thermometers—Indicating and Recording—
American Schaeffer & Budenberg Corp.
Bristol Co.
Brown Instrument Co.
Foxboro Co., Inc.
Taylor Instrument Co.
Thermometers—Resistance
Brown Instrument Co.
Threading Machines—
Bignal & Keeler Machine Wks.
Cox & Sons Co., The
Landis Machine Co.
Thread Protectors—
Spang & Co.
Tires—Automobile—
Continental Supply Co.
Tires—Pneumatic & Solid—
Kelly-Springfield Tire Co.
Tires—Truck—
Kelly-Springfield Tire Co.
Tongs—
Bridgeport Machine Co.
Wilson Oil Tools Corp.
Tongs—Back Up—
Williams, J. H., & Co.
Tongs—Break Out—
Reed Roller Bit Co.
Williams, J. H., & Co.
Tongs—Casing—
Dunn Mfg. Co.
Gulberson Corp.
Tongs—Chain Pipe—
Armstrong Bros. Tool Co.
Williams, J. H., & Co.
Tongs—Pipe—
National Transit Pump & Machine Co.
Tongs—Rotary—
Dunn Mfg. Co.
Tongs—Tool Joint—
Gulberson Corp.
Hughes Tool Co.
Reed Roller Bit Co.
Tongs—Tubing—
Dunn Mfg. Co.
Tool Boxes—
Gallagher Co.
Tool Chests—Pipe—
Nye Tool & Machine Works
Tool Joints—
Bridgeport Machine Co.
Federal Supply Co.
Hughes Tool Co.
Lucey Mfg. Corp.
Oil Well Supply Co.
Pelican Well Tool & Supply Co.
Regan Forge & Engineering Co.
W. K. M. Company
Torches—
Oxweld Acetylene Co.
Towers—
Biggs Boiler Works Co.
Graver Corp.
Tractors—
Cleveland Tractor Co.
International Harvester Co. of America.
Trailers—
Nabors, W. C., Co.
Spencer Trailer Co.
Transmission Belt—Rubber—
Goodrich, B. F., Rubber Co.
United States Rubber Co.
Transmission Lining—
Stanley Belting Corp.
Traveling Block—
Lucey Mfg. Corp.
Lufkin Fdy. & Mch. Co.
Regan Forge & Engineering Co.
Wright Mfg. Co.
Trenchers—Vertical Boom—
Barber-Greene Co.
Trucks—Motor—
General Motors Truck Co.
Graham Brothers.
International Harvester Co. of America.
Tubes—Boiler, Charcoal Iron—
Byers, A. M., Co.
Reading Iron Co.
Tubes—Boiler Steel—
Allegheny Steel Co.
Continental Supply Co.
National Tube Co.
Ryerson, Jos. T., & Son, Inc.
Tubing—
Babcock & Wilcox Tube Co.
Byers, A. M., Co.
Central Tube Co.
Continental Supply Co.
National Tube Co.
Pittsburgh Steel Products Co.
Reading Iron Co.
Republic Iron & Steel Co.
South Chester Tube Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.
Tubing Catchers—
Dunn Mfg. Co.
Guiberson Corp.
W. K. M. Company
Tubing Protectors (See Rod Guides)—
Tubular Goods—
Babcock & Wilcox Tube Co.
Central Tube Co.
Continental Supply Co.
Oil Well Supply Co.
Pittsburgh Steel Products Co.
Republic Iron & Steel Co.
Spang, Chalfant & Co., Inc.
Wheeling Steel Corp.
Tubular Goods—Wrought Iron—
Byers, A. M., Co.
Reading Iron Co.
Turbines for Lighting Equipment
Lucey Mfg. Corp.
Westinghouse Electric & Mfg. Co.

U

Underreamer Body Steel—
Andrews Steel Co.
Heppenstall Forge & Knife Co.
Underreamers—
Bridgeport Machine Co.
Guiberson Corp.
Wilson Oil Tools Corp.
Unions—
Central Forging Co.
Dart, E. M., Mfg. Co.
Jefferson Union Co.

V

Valves—Automatic Control—
Brown Instrument Co.
Valves—Blow-Off—
Homestead Valve Mfg. Co.
Merco Nordstrom Valve Co.
Valves—Brass and Bronze—
Homestead Valve Mfg. Co.
Lunkenheimer Co.
Reading Steel Casting Co.
Walworth Co.
Valves—Cast Steel—
Chapman Valve Mfg. Co.
Homestead Valve Mfg. Co.
Walworth Co.
Valves—Check—
Gaso Pump & Burner Mfg. Co.
Lunkenheimer Co.
Valves—Drop Forged Steel—
Edward Valve & Mfg. Co.
Vogt, Henry, Machine Co.
Valves—Gate—High and Low Pressure—
Barber Asphalt Co.
Chapman Valve & Mfg. Co.
Crane Co.
Darling Valve & Mfg. Co.
Kennedy Valve Mfg. Co.
Kerotest Mfg. Co.
Ludlow Valve Mfg. Co.
Lunkenheimer Co.
Murray Tool & Supply Co.
Powell, Wm., Co.
Valves—Iron—
Chapman Valve Mfg. Co.
Lunkenheimer Co.
Merco Nordstrom Valve Co.
Reading Steel Casting Co.
Walworth Co.
Valves—Pump—
Garlock Packing Co.
United States Rubber Co.
Valves—Relief—Supersensitive—
Davis, G. M., Regulator Co.
Valves—Standing—
W. K. M. Company
Valves—Steel—
Chapman Valve Mfg. Co.
Edward Valve Mfg. Co.
Kerotest Mfg. Co.
Lunkenheimer Co.
Metric Metal Works.
Powell, Wm., Co.
Reading Steel Casting Co.
Valves—Tank Tent—
Brooks Engineering Corp.
Oil Conservation Engineering Co.
Valves—Working Barrel—
Axelson Machine Co.
D. & B. Pump & Supply Co.
Hough, Charles N., Mfg. Co.
Norris Brothers, Inc.
Northrup Equipment Co.
Oil Well Supply Co.
W. K. M. Company
Varnishes—
Arco Company, The
Detroit Graphite Co.
Ventilators—Roof—
Burt Mfg. Co.
Vises—Bench—
Nye Tool & Machine Works
Vises—Pipe—
Nye Tool & Machine Works

W

Wagons—Truss Wheel—
Athey Truss Wheel Co.
Walking Beams—Steel—
Emsco Derrick & Equipment Co.
Lufkin Fdy. & Mch. Co.
Moore, Lee C., & Co., Inc.
Water Cooling Systems—
Power Plant Equipment Co.
Waterproofing Materials—
Celite Products Co.
Water Softeners and Filters—
Butler Mfg. Co.
Graver Corp.
Wax—
Barnsdall Refining Co.
Gulf Refining Co.
Pure Oil Co.
Weight Indicators—
Hughes Tool Co.
Welding Accessories—Electric—
General Electric Co.
Wilson Welder & Metals Co.
Welding Machines—Electric—
General Electric Co.
Lincoln Electric Co.
Welding and Cutting Apparatus—
Oxweld Acetylene Co.
Welders—Electric Arc—
Wilson Welder & Metals Co.
Welding Supplies—
Oxweld Acetylene Co.
Welding Wire—
Frick-Reid Supply Co.
Haynes Stellite Co.
Lincoln Electric Co.
Oxweld Acetylene Co.
Page Steel & Wire Co.
Wilson Welder & Metals Co.
Well Shooting—
Eastern Torpedo Co.
Kinley, M. M.
Zero Hour Torpedo Co.
Wheels—Pipe Cutter—
Nye Tool & Machine Works
Winches—
Braden Steel & Winch Co.
Brooks Engineering Co.
Oil Conservation Engineering Co.
Rock Island Plow Co.
W. K. M. Company
Wire Lines (See Cables—Steel)—
Wood Patterns and Models—
Gaso Pump & Burner Mfg. Co.
Working Barrels—
Axelson Machine Co.
D. & B. Pump & Supply Co.
Franklin Valveless Engine Co.
Frick-Reid Supply Co.
Hough, Charles N., Mfg. Co.
McGregor Working Barrel Co.
Norris, W. C.
Northrup Equipment Co.
Oil Well Supply Co.
Wrenches—Closed Ends—
Nye Tool & Machine Works
Wrenches—Drop Forged—
Williams, J. H., & Co.
Wrenches—Pipe—
Trimont Mfg. Co.
Walworth Co.
Wrenches—Ratchet—
Dresser, S. R., Mfg. Co.
Nye Tool & Machine Works

Z

Zinc Oxide—
Eagle-Picher Lead Co.

Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS
Pipe Line Statement for January
Runs

Company—	Month	Dy.Ave.
*Prairie P. L. Co.	4,340,000	140,000
Gulf P. L. Co.	1,378,740	44,476
Texas P. L. Co.	729,724	23,539
Magnolia Pet. Co.	1,618,217	52,201
Empire P. L. Co.	978,713	31,571
Cosden P. L. Co.	874,641	28,214
Sinclair P. L. Co.	2,021,913	65,223
*Other lines	12,152,000	392,000
Total January	24,093,948	777,224
Total December	21,543,154	694,941
Difference	2,550,794	82,283

Shipments

Company—	Month	Dy.Ave.
†Prairie P. L. Co.	4,850,793	156,477
Gulf P. L. Co.	1,272,109	41,036
Texas P. L. Co.	552,425	17,820
Magnolia Pet. Co.	1,462,529	47,178
Empire P. L. Co.	718,643	23,182
Cosden P. L. Co.	889,518	28,694
†Sinclair P. L. Co.	2,615,441	84,369
*Other lines	10,312,000	332,000
Total January	23,273,458	750,756
Total December	20,901,529	674,242
Difference	2,371,929	76,514

Stocks

*Prairie Oil & Gas Co.	28,195,000
*Prairie P. L. Co.	2,000,000
Gypsy Oil Co. and Gulf P. L.	7,421,895
The Texas Company	3,150,163
Magnolia Petroleum Co.	3,284,287
Empire P. L. Co.	2,583,657
Cosden P. L. Co.	2,314,159
†Sinclair Crude Oil Purchasing Co.	18,460,000
Carter Oil Co.	14,016,439
*Other lines	9,000,000
Total January	90,410,600
Total December	88,414,470
Difference	1,996,130

*Estimated. †Sinclair shipments include Wyoming and Texas oil, and Prairie shipments include Texas oil.

Note—Stocks do not include approximately 3,600,000 bbls. of crude oil held in private tank farms and leases, and 2,250,000 bbls. of Texas Panhandle crude in storage in Kansas and Oklahoma.

EASTERN PIPELINES
Runs From Wells

In the following table will be found the regular receipts from wells by various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec. '26	Jan. '27
Nat. Transit	136,129.26	131,633.26
S. W. Pa. P. L.	99,307.51	91,671.32
Eureka P. L.	395,965.82	356,257.54
Buckeye P. L. (Macksburg)	319,348.62	306,320.21
Buckeye P. L. (Cleveland)	10,989.80	8,898.60
Buckeye P. L. (Lima, etc.)	116,321.22	105,316.84
Indiana P. L.	9,350.40	7,885.73
Cumberland P. L.	274,563.00	239,494.29
N. Y. Transit	21,976.20	20,624.12
Tidewater P. L.	170,862.42	164,816.27
Pure Oil	169,509.82	181,623.77
Emery P. L.	53,943.26	51,721.92
Indian Ref.	17,645.33	
Paragon Dev.	19,826.89	29,152.24
Pittsburgh P. L.	5,675.78	4,492.56
Stoll Ref.		12,571.47
Total	1,821,415.33	1,742,480.14
Daily average	58,755.33	56,209.04

Note—Indian Refining Co. also reported other receipts of 327,021.57 bbls. Paragon Refining Co. had other receipts of 179,488.10 bbls. Paragon Development had other receipts of 1,880.59 bbls. Pure Oil had other receipts of 26,031.35 bbls.

Petroleum Deliveries

The following tables exhibit the shipments of regular deliveries of various pipelines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for December and January:

	Dec. '26	Jan. '27
Nat. Transit	379,912.08	339,689.42
S. W. Pa. P. L.	387,781.68	376,678.56
Eureka P. L.	216,977.84	185,046.54
Buckeye P. L. (Macksburg)	154,946.46	152,046.86
Buckeye P. L. (Cleveland)	728.64	728.46
Buckeye P. L. (Lima, etc.)	728,320.54	836,059.08
Indiana P. L.	994,926.94	996,930.49
Cumberland P. L.	149,491.00	170,916.10
N. Y. Transit	149,023.17	268,721.23
Northern P. L.	131,731.38	146,042.27
Tidewater P. L.	126,654.61	142,906.68
Pure Oil	180,336.40	185,495.89
Emery P. L.	52,687.50	56,726.35
Paragon Ref.	144,201.93	162,514.12
Indian Ref.	344,748.27	327,021.57
Paragon Dev.	27,034.30	26,199.57
Pittsburgh P. L.	5,770.94	4,316.92
Total	4,229,273.77	4,378,040.11
Daily average	136,428.19	141,227.10

Gross Stocks

The gross stocks held by various pipelines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky, at the close of December and January, were as follows:

	Dec. '26	Jan. '27
Nat. Transit	959,787.37	958,639.67
S. W. Pa. P. L.	759,804.36	783,090.22
Eureka P. L.	1,302,500.01	1,289,959.42
Buckeye P. L. (Macksburg)	409,640.31	418,744.17
Buckeye P. L. (Cleveland)	88,953.99	60,087.54
Buckeye P. L. (Lima, etc.)	2,682,184.36	3,048,045.04
Indiana P. L.	556,975.01	563,842.08
Cumberland P. L.	635,489.39	584,088.08
Southern P. L.	359,852.78	418,089.38
N. Y. Transit	684,279.12	576,728.60
Northern P. L.	449,888.71	423,541.24
Pure Oil	476,016.16	472,351.27
Emery P. L.	11,903.35	6,124.26
Paragon Ref.	22,286.05	38,841.67
Indian Ref.	44,154.00	66,887.83
Paragon Dev.	6,753.55	10,670.92
Pittsburgh P. L.	4,041.67	4,170.61
Total	9,454,512.19	9,718,003.00
Increase	196,844.60	263,490.18

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of December and January, showing the gross stocks of the above fields:

	Dec. '26	Jan. '27
Pennsylvania	3,721,105.82	3,703,521.72
Lima	747,203.76	741,567.39
Kentucky	1,078,893.67	1,034,892.99
Mid-Continent	3,876,698.05	4,134,204.33
Illinois	30,610.89	103,816.57
Total	9,454,512.19	9,718,003.00

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1924	1925	1926	1927
January	62,638	56,831	55,630	56,209
February	68,023	60,606	60,394	.....
March	68,721	60,575	61,644	.....
April	71,058	63,062	63,019	.....
May	63,942	59,217	60,580	.....
June	63,230	61,270	64,131	.....
July	64,208	62,639	63,206	.....
August	59,942	59,686	61,815	.....
September	62,930	62,510	64,639	.....
October	64,976	60,925	62,704	.....
November	58,282	59,350	61,774	.....
December	55,814	57,974	58,755	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1924	1925	1926	1927
January	145,518	157,889	156,056	141,227
February	148,732	160,863	159,488	.....
March	147,098	154,591	160,239	.....
April	147,611	151,429	152,371	.....
May	134,997	146,995	160,999	.....
June	143,010	149,467	160,257	.....
July	124,187	161,338	160,945	.....
August	123,120	161,730	151,929	.....
September	127,325	156,719	158,915	.....
October	123,170	146,388	161,132	.....
November	124,400	143,582	152,668	.....
December	151,392	150,162	136,428	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at close of each month for the past three years:

	1925	1926	1927
January	11,353,276	9,859,170	9,71
February	11,192,924	9,579,354	
March	11,158,297	9,438,292	
April	11,062,082	9,805,851	
May	11,207,562	9,531,757	
June	11,093,796	9,585,904	
July	11,067,453	9,734,687	
August	10,974,481	9,608,947	
September	10,781,753	9,433,732	
October	11,086,850	9,269,806	
November	11,068,158	9,257,667	
December	10,458,445	9,454,512	

Franklin Pipe Line Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and accounted in the stocks and averages reported above:

1926—	Runs	Shipments	Stocks
January	2,990.16	1,478.35	13,0
February	2,580.23	2,776.19	13,0
March	2,754.62	1,732.77	13,0
April	3,137.40	4,519.68	13,0
May	2,933.20	2,096.35	13,8
June	3,217.62	1,655.15	14,3
July	3,025.86	4,075.11	13,3
August	2,886.58	1,121.21	14,0
September	2,788.18	3,373.06	13,8
October	2,991.86	2,307.75	14,0
November	2,810.60	1,864.65	15,0
December	2,847.52	5,561.11	12,3
1927—			
January	2,641.54	1,470.42	14,1

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stock February 1	2,62
Runs from wells	584,0
Other receipts	440,3
Regular deliveries	452,3
Other deliveries	631,2

The amount of Illinois oil run by the Tidewater Pipe Co. in January was 26,532,33 and delivered were 76,829.92 bbls. these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1926—	Runs	Deliveries
January	665,243.62	516,0
February	632,611.96	506,5
March	753,300.74	524,8
April	610,957.04	487,0
May	682,416.67	498,0
June	693,102.34	558,0
July	713,490.66	490,0
August	701,795.92	565,7
September	688,798.66	516,0
October	681,648.96	531,0
November	651,263.33	498,0
December	668,909.58	581,9
1927—		
January	621,421.03	530,0

The Tidewater Pipe Co., Ltd., also delivered in January 264,502.09 bbls. of Ohio oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	To All
October	13,742	10,258	37,000	5,936	18,355	85,290	.....	.....	.....	742	742	
November	6,400	16,600	37,633	23,533	17,300	91,467	.....	.....	.....	.....	.....	
December	13,645	7,129	39,645	7,419	9,774	77,613	.....	.....	.....	.....	.....	
January	5,097	8,258	26,290	15,932	14,807	70,355	.....	.....	.....	806	806	

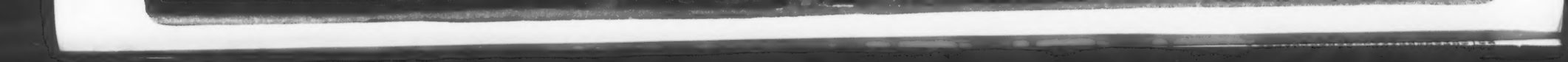
AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	To All
October	20,452	6,926	67,542	5,516	20,916	121,323	10,129	29,516	3,839	5,419	48,930	1
November	14,867	7,167	65,967	5,700	27,433	111,133	18,133	35,200	2,500	2,900	58,733	1
December	12,484	10,613	66,129	7,462	24,064	110,742	12,648	40,742	2,903	10,839	67,032	1
January	16,032	8,226	64,387	4,065	31,064	123,774	7,903	43,629	.....	4,123	55,645	1

GROSS PRODUCTION OF THE UNITED STATES FOR 12 MONTHS

(IN BARRELS)

1926—		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mountains	Eastern Fields	To
January:	Month	19,069,563	13,674,813	11,059,467	3,250,536	5,489,604	1,726,390	3,136,280	3,014,000	62,0
	Daily average	615,147	441,123	356,757	104,856	177,084	55,690	104,396	97,226	1,9
February:	Month	17,163,963	12,392,016	9,943,232	2,891,812	4,756,836	1,584,184	2,778,605	2,931,000	54,4
	Daily average	612,999	442,572	355,115	103,279	169,887	56,578	99,236	104,678	1,9
March:	Month	18,826,786	14,312,886	11,014,238	3,334,887	5,115,837	1,889,636	3,161,250	3,349,000	61,0
	Daily average	608,283	461,706	355,298	107,577	165,027	60,956	101,976	108,032	1,9
April:	Month	18,091,771	14,468,790	10,779,760	3,330,120	5,127,510	1,959,570	3,231,404	3,183,000	60,1
	Daily average	603,059	482,273	359,992	111,004	170,917	65,319	104,229	106,100	2,0
May:	Month	18,667,144	14,507,008	11,940,797	3,516,640	5,482,939	2,231,938	3,459,489	3,317,000	63,1
	Daily average	602,166	467,968	385,187	113,440	176,869	71,998	111,596	107,000	2,0
June:	Month	18,269,417	14,073,510	11,782,200	3,346,470	5,064,760	2,206,830	3,437,905	3,365,000	61,5
	Daily average	608,981	469,117	392,740	111,549	168,822	73,561	114,597	112,167	2,0
July:	Month	18,743,199	14,657,482	13,983,759	3,582,267	5,019,892	2,173,813	3,336,664	3,420,000	64,8
	Daily average	604,619	472,822	451,089	115,557	161,932	70,123	10..634	110,323	2,0
August:	Month	18,765,080	14,618,236	17,093,586	3,681,436	4,878,191	2,190,739	3,467,697	3,333,000	68,0
	Daily average	605,326	471,556	551,406	118,756	157,361	73,896	111,538	107,726	2,1
September:	Month	18,194,954	14,466,510	17,580,100	3,450,060	4,603,230	2,079,840	3,141,123	3,330,000	66,5
	Daily average	603,498	482,217	586,003	115,002	153,441	69,328	104,704	111,000	2,2
October:	Month	18,966,058	15,720,689	19,001,388	3,714,637	4,625,138	2,166,559	3,071,720	3,398,000	70,6
	Daily average	611,808	507,119	612,948	119,827	149,198	69,889	99,088	109,613	2,2
November:	Month	19,173,128	16,876,950	18,593,160	3,693,490	4,299,480	2,054,911	2,842,587	3,216,000	70,6
	Daily average	639,104	562,565	619,772	119,783	143,316	68,497	94,752	107,200	2,3
December:	Month	20,276,950	17,882,908	19,753,691	3,664,156	4,266,189	2,018,734	2,658,301	3,313,000	72,5
	Daily average	654,095	576,868	637,212	117,876	137,619	65,120	85,752	106,871	2,3
	Total 12 months	224,117,013	177,651,198	172,545,278	41,346,511	58,729,606	24,283,144	37,713,025	39,175,500	775,5
	Daily average	614,019	486,716	472,727	113,278	160,903	66,529	103,324	107,332	2,1



Emergency Service

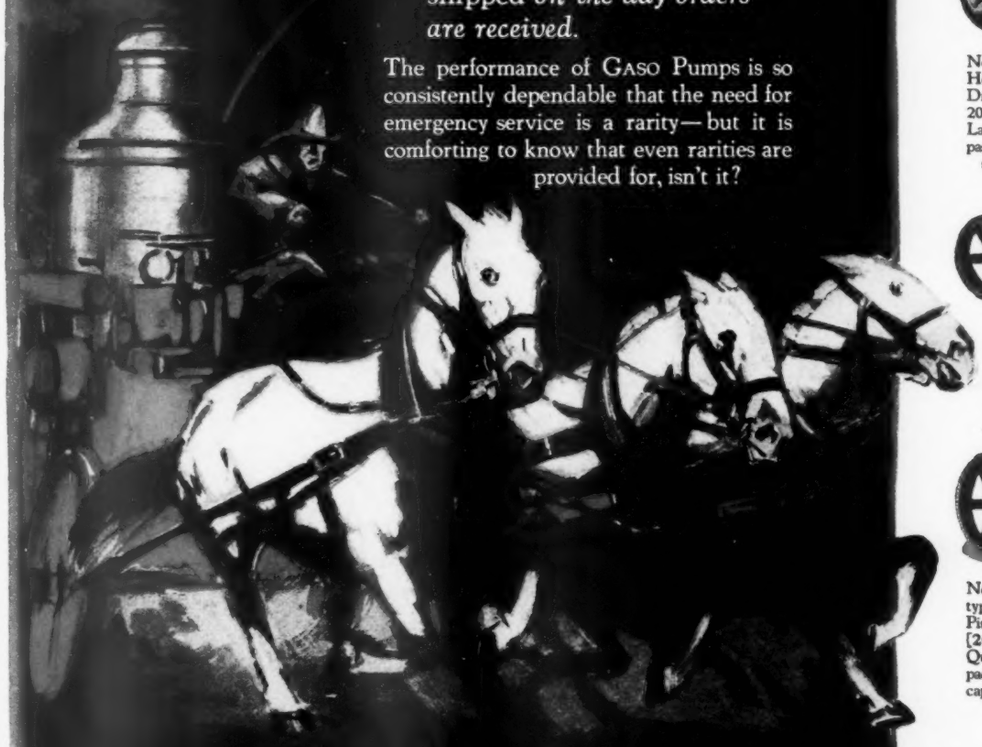
In seeking to guard your company against the possibility of serious breakdowns in pumping service, here are three things to keep in mind—

GASO Pumps have *fewer* and *stronger* parts.

The GASO plant is in *Tulsa*.

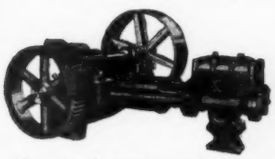
As a rule, GASO parts are shipped *on the day orders are received.*

The performance of GASO Pumps is so consistently dependable that the need for emergency service is a rarity—but it is comforting to know that even rarities are provided for, isn't it?



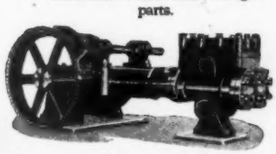
GEAR-DRIVEN PUMPS

Geared to Long Life and Real Service



No. 501—A popular model Gaso Horizontal Duplex Piston Gear-Driven Power Pump, designed for 200 to 800 pound working pressures. Large, direct, unobstructed fluid passages and valve areas; simple design; *fewer* and *stronger* parts.

No. 507—Gaso Horizontal Duplex Piston Gear-Driven Power Pump, especially suited to *suction* service. Ideal for large capacity low-pressure work. Valves and parts easily accessible. *Fewer* and *stronger* parts.



No. 508—*Interchangeable liner* type of Gaso Horizontal Duplex Piston Gear-Driven Power Pump [200 to 800 pound pressures]. Quickly changeable from large capacity low-pressure service to small capacity high-pressure service. *Fewer* and *stronger* parts.

* * * * *

GASO PUMP & BURNER MFG. CO.

Tulsa · Oklahoma

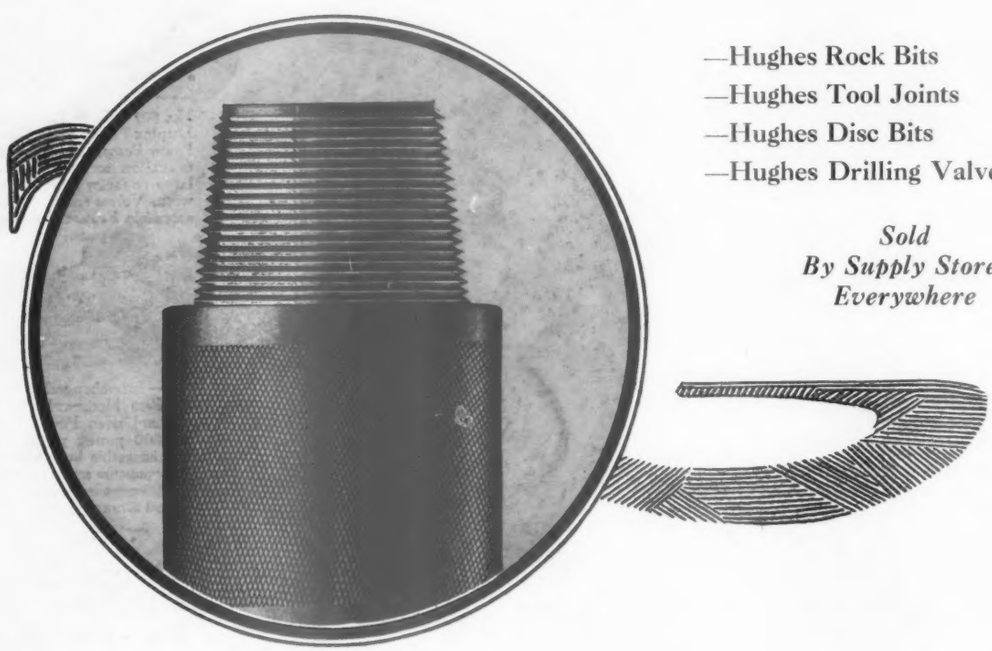
GASO PUMPS

for every oil industry need

Increased Activity
In Any Rotary Field
Means An—

INCREASED DEMAND *for* HUGHES TOOLS

Do you know that HUGHES "Self-Cleaning" Cones have broken all Performance Records for Speed in making hole?



—Hughes Rock Bits
—Hughes Tool Joints
—Hughes Disc Bits
—Hughes Drilling Valves

Sold
By Supply Stores
Everywhere

HUGHES TOOL COMPANY

Service Plants:
Los Angeles, Calif.
Oklahoma City, Okla.

Main Office and Plant:
HOUSTON,
TEXAS

Export Office:
New York City